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STATE OF COLORADO
BUREAU OF MINES

State Capitol, Denver

HORACE F. LUNT, Commissioner of Mines

ANNUAL REPORT FOR
THE YEAR
1922



DENVER, COLORADO
EAMES BROTHERS, PRINTERS
1923

STATE OF COLORADO
BUREAU OF MINES
State Capitol, Denver
HORACE F. LUNT, Commissioner of Mines

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LETTER OF TRANSMITTAL

To His Excellency,

THE HONORABLE WILLIAM E. SWEET,
Governor of Colorado.

Sir: In compliance with Section 3392 of the Compiled Laws of Colorado, 1921, I have the honor to transmit herewith the Annual Report of the State Bureau of Mines for the year 1922, including the Financial Report for the biennial period 1921-1922.

Respectfully submitted,

HORACE F. LUNT,
Commissioner of Mines.

State Capitol,
Denver, Colorado,
April 15, 1923.

PERSONNEL OF THE BUREAU OF MINES OF THE STATE OF COLORADO

HORACE F. LUNT, Commissioner of Mines.....	Denver
T. R. HENAHEN, Inspector, District No. 1.....	Denver
M. J. McCARTHY, Inspector, District No. 2.....	Cripple Creek
R. J. MURRAY, Inspector, District No. 3.....	Salida
ROBERT INNES, Inspector, District No. 4.....	Montrose
MISS ETHEL M. FLANDERS, Chief Clerk.....	Denver
MRS. A. M. NICKERSON, Stenographer.....	Denver

DISTRICTS OF INSPECTION

DISTRICT No. 1.—Moffat, Routt, Jackson, Grand, Larimer, Boulder, Gilpin, Clear Creek, Jefferson, Denver, Weld, Adams, Arapahoe, Morgan, Logan, Sedgwick, Phillips, Washington and Yuma Counties.

DISTRICT No. 2.—Douglas¹, Elbert, Teller, El Paso, Fremont, Custer, Huerfano, Las Animas, Pueblo, Lincoln, Kit Carson, Cheyenne, Kiowa, Crowley, Otero, Bent, Prowers and Baca Counties.

DISTRICT No. 3.—Rio Blanco, Garfield, Mesa², Delta, Eagle, Summit, Pitkin, Lake, Park and Chaffee Counties.

DISTRICT No. 4.—Montrose, San Miguel, Dolores, Montezuma, Ouray, San Juan, La Plata, Gunnison³, Hinsdale, Saguache³, Mineral³, Rio Grande, Alamosa, Archuleta, Conejos and Costilla Counties.

¹The northern part of Douglas County has been temporarily transferred to District No. 1.

²The southwestern part of Mesa County has been temporarily transferred to District No. 4.

³That part of Saguache County lying east of the Continental Divide, the northern part of Gunnison County and Mineral County have been temporarily transferred to District No. 3.

FINANCIAL STATEMENT

1921-1922

RECEIPTS

Appropriation for the fiscal years 1921-1922—

Salary, Commissioner	\$ 6,000.00
Salaries, Inspectors	14,400.00
Salary, Clerk and Assistant Curator.....	3,000.00
Salary, Stenographer and Assistant Clerk.....	2,400.00
	—————
Traveling Expenses, Commissioner.....	\$ 3,200.00
Traveling Expenses, Inspectors.....	14,400.00
	—————
Incidental Fund	\$ 2,500.00
	—————
	\$ 45,900.00

DISBURSEMENTS

Salaries—

Commissioner	\$ 6,000.00
Inspector, District No. 1.....	3,600.00
Inspector, District No. 2.....	3,600.00
Inspector, District No. 3.....	3,600.00
Inspector, District No. 4.....	3,600.00
Clerk and Assistant Curator.....	3,000.00
Stenographer and Assistant Clerk.....	2,400.00
	—————
	\$ 25,800.00

Traveling Expenses—

Commissioner	\$ 3,114.55
Inspectors	12,369.70
Unexpended Balance	2,115.75
	—————
Incidental Expenses	\$ 1,503.16
Unexpended Balance	996.84
	—————
	2,500.00
	—————
	\$ 45,900.00

INTRODUCTION

The activities of the Bureau of Mines during 1922 were confined to the usual routine, no funds for any special work being provided.

The four inspectors visited practically all of the operating metal mines, quarries, mills and smelters at least once during the year. Most of the larger operations were inspected more than once. The object of these inspections is to eliminate, as far as possible, unsafe conditions and practices. In general, this work meets with the lively co-operation of the mine operators.

The Commissioner and Inspectors are anxious to help the mining industry in every legitimate manner and wish to be called upon whenever their services can be used.

Inquiries regarding the mines and mineral resources of the state and questions regarding the demand and market for less common mineral products are constantly coming into the Bureau. An earnest endeavor is made to furnish the information desired. Helpful co-operation is often received from the Colorado Geological Survey, the United States Bureau of Mines and the United States Geological Survey.

On account of lack of funds it has been impossible to give the State Mineral Collection the attention it deserves. During the past year a few new specimens have been received.

The Commissioner takes this opportunity of expressing his appreciation of the loyal and efficient services that have been rendered by the entire personnel of the Bureau during his term of office and to bespeak the same hearty co-operation for his successor.

METAL MINING IN 1922

GENERAL CONDITIONS

The metal mining industry of Colorado is now in a better condition than it has been at any time since the war and is improving right along. During the latter part of 1920 and the early months of 1921 it was more depressed than it had been since 1893. This depression was due to the rapid fall in the prices of lead and zinc added to the war-time costs which had not at that time begun to decrease. Practically all the mines which were worked primarily for zinc had closed and only those lead mines which had unusually rich ores, or those containing considerable quantities of silver and gold continued to operate. The gold mines were still struggling against the adverse conditions brought about by the decreased purchasing power of their product. The end of 1921 was marked by a distinct, though slight, improvement in most of the metal mining districts. Reduction in wage scales and the decreasing cost of supplies, together with small advances in the prices of the base metals, had a favorable effect. The improvement was rather slow until the latter part of 1922 when the marked increases in the prices of lead and zinc gave reason for belief in a steady and favorable ore market.

The slight increases shown in the production statistics, given elsewhere in this report, by no means indicate the greatly increased activity which is still continuing. The rehabilitation of mines which have been shut down takes time and the full effects of resumption have not yet been reflected in the production.

REVIEW OF THE PRINCIPAL MINING DISTRICTS

On account of the closing of the smelters at Denver and Pueblo, the ores from the three northern mining counties, Gilpin, Clear Creek and Boulder, have had to stand the comparatively high freight rate to Leadville. There are schemes on foot which may result in the erection of an electric smelter near Denver to treat the ores which are too low grade to be profitably mined under present conditions. As it is, there has been less activity in these counties than elsewhere in the state.

The only large new operation is that of the East Butte Copper Mining Company. This well-known Butte company, early last year, took over the Dives-Pelican and other old-time producers at Silver Plume, Clear Creek county. One of the old mills was rebuilt as a modern 500-ton flotation plant which has been treating dumps and stope fillings with satisfactory results. Underground development work is also in progress. The Wasatch-Colorado Company, also at Silver Plume, like other zinc producers, has resumed operations.

A great many small operations have been commenced throughout the northern counties, many of them in districts, such as Perigo in the northwestern part of Gilpin county, where there had been no work done for several years. While none of these operations is large, many of them are producing and, in the aggregate, adding appreciably to the total production. Tungsten mining in Boulder county, which has been at a standstill since the Armistice, is beginning again.

In Summit county the Wellington, one of the largest zinc mines of the state, has resumed operations after being shut down for nearly two years. Successful operations have also been carried on in a number of smaller properties which produce gold and silver. The dredges of the Tonopah Placers Company and the Blue River Placer Mining Company have been in steady operation. The old French Gulch dredge, which had been idle for some time, was started again by the Florence Dredging Company. Some small hydraulic mining operations are also in progress. Very little work has been done in the Frisco and Kokomo districts. The Michigan, near Kokomo, a producer of pyritic silver ore, has been the only mine in constant operation.

The London Mine in Park county has continued to produce a small tonnage of high-grade gold ore. The Hilltop has been operated intermittently for its lead ores. The South Park Dredging Company completed a dredge in the valley of the Platte river near Fairplay and started digging last June. The erection of two larger dredges to handle the deeper gravels on each side of the river channel is contemplated.

There has been a decided increase in activity around Leadville and elsewhere in Lake county. The Down Town Mines Company is doing extensive development work. A tunnel is being driven into Canterbury Hill to explore new territory and to unwater the Fryer Hill basin. The South Ibex Mining Company is exploring ground southwest of the Little Jonny and the Garbutt. Many other prospecting operations are in progress near Leadville and also in the St. Kevin and Sugar Loaf districts.

The Rawley Mine at Bonanza, Saguache county, has been financed by a combination of the Bulkeley Wells interests, the American Smelting and Refining Company and the old Rawley Mining Company. A 300-ton concentrating mill and a $7\frac{1}{2}$ -mile aerial tramway are under construction and will be completed about May 1st. The Orient iron mine near Villa Grove, which has been operated intermittently by lessees for many years, is now being systematically developed by the Colorado Fuel & Iron Company.

Some new discoveries of silver ore near Aspen, Pitkin county, have been made, but lack of capital has hindered their development as yet.

A large tonnage of pyritie silver-copper ore has been shipped from the Eagle Mine at Gilman, Eagle county, and it is reported that zinc ores are now also being produced.

In the San Juan country the greatest activity was at Telluride, San Miguel county, where the Smuggler-Union and the Tomboy were responsible for the greater part of the production. The Black Bear will soon start producing on a large scale. There was very little work done in San Juan county until late in the autumn when operations were resumed on a number of properties, notably the Sunnyside. In Ouray county the Atlas and the Mountain Top were the chief producers. The underground development at the former was great enough to warrant doubling the capacity of the mill, the new units of which have lately been placed in successful operation. Very little work was done in Mineral and Hinsdale counties, but some encouraging discoveries of high grade silver ore have been made; notably in the Bachelor at Creede and the Belle of the West and Ute at Lake City.

The Cripple Creek District, Teller county, has scarcely recovered from the war-time depression, but is now in better condition than it has been. A fine body of high-grade ore on the 2,600-foot level of the Portland, the deepest working in the district, has been developed for a length of 1,000 feet and further sinking is now in progress. The Independence mill of the Portland Company was closed in July after an unsuccessful trial on a large tonnage of stope fillings mixed with medium-grade ores. In October it was re-opened to treat a reduced tonnage of ore-house rejects and low-grade ore which is being done successfully. The Cresson has been a steady producer of a large tonnage of medium-grade ore. New hoisting equipment is being erected preparatory to sinking. The El Paso Mine is being re-opened. The Ajax was taken over by a subsidiary of the Tonopah Mining Company of Nevada which has repaired the surface plant and is prosecuting extensive development work.

SMELTING

Since June, 1921, the only operating lead smelters have been those at Leadville and Durango. Until recently there were only two or three furnaces operated at the Arkansas Valley Plant and one at the Durango Plant. Now there are four at the Arkansas Valley and two at Durango.

The Smelting Company, in co-operation with the Bulkeley Wells interests, is now erecting a sulphating plant at Durango to treat the complex concentrates from the Black Bear Mine at Telluride by what is commonly called the Coolbaugh process. This will remove the zinc and copper, leaving a lead residue which can be treated in the blast furnace. There is every reason to believe that this plant will be successful and that it will be

enlarged to treat the ore from other mines. This will render available large tonnages of zincy ores that heretofore could not be mined and treated profitably.

During the past year several zinc oxide plants, which had been shut down for a year or two were started up. These are the Western Zinc Concentrating Company at Leadville, the Empire Zinc Company at Canon City, the River Smelting and Refining Company at Florence and the United States Zinc Company at Pueblo.

MINOR METALS

There has been little or no production of manganese, tungsten, molybdenum, vanadium, uranium and radium in recent years. The new tariff has stimulated interest in manganese and tungsten and production will probably be re-commenced before the end of 1923. It is also possible that the large molybdenum mine at Climax will be re-opened in the near future. The shipment of large quantities of pitchblende ores from the Belgian Congo has put the Colorado carnotite mines out of business. Radium can be made from the African ores to sell at \$75,000 a gram, while that from carnotite must be sold at about \$125,000 a gram to be profitable. How long the African ores will last has not been determined. The roscoelite ores of vanadium, which occur in southwestern Colorado, are too low-grade to compete with the imported ores of higher grade, consequently there does not appear to be much chance of any of the vanadium mines being re-opened in the near future. A discovery of vanadium ore in Garfield county, near Rifle, has recently been reported.

Arsenic, cadmium and thallium are refined at the old Globe Smelter, in Denver, from flue dust from other smelters. Much of this material is, however, from other states.

NON-METALLIC MINERALS

The Yule marble quarries, in the northern part of Gunnison county, which produced the marble for the Lincoln Memorial at Washington and for many of the handsomest buildings in Denver, were shut down in 1916. Last summer the work of repairing the railroad to Marble and of re-opening the quarries was started. It is reported that sufficient marble has been contracted for to keep them in operation for several years.

Fluorspar production has been small and chiefly from one mine in Mineral county. A new fluorspar mine is being developed in Jackson county which promises to become a large producer. Other known Colorado fluorspar mines cannot be profitably operated with present prices and costs.

Granite is produced in several localities and is used for monuments and building stone. The smelters, sugar factories

and cement plants require considerable quantities of limestone which is quarried locally. Plastic and fire clays are mined and quarried in many parts of the state, but chiefly in Jefferson and Fremont counties. Kaolin, fullers earth, and other clays are occasionally mined for local use. Small quantities of feldspar and mica are produced, but lack of local markets and high freight rates to eastern points have held back development. For the same reasons, no barytes is now being produced.

The development of the immense deposits of oil shales in the northwestern part of the state is going ahead slowly. No commercial production of oil has been made as yet. A good many large oil companies are acquiring and patenting shale claims.

CONCLUSION

There are only two factors that are likely to check the present revival of Colorado's metal mining industry. One is a shortage of skilled miners and the other is the approaching expiration of the Pittman Act. The latter will, in all probability, cause the shutting down of a good many small silver mines which can make a little profit when silver is worth a dollar or more an ounce, but not when it is lower. It seems likely that there will be more mines developed which can produce other metals as well as silver and which will offset those that depend on silver alone. The labor shortage is not yet acute, if it becomes so it may be a serious deterrent to increased production. We can only hope for the best.

On the whole the outlook is much more encouraging than it has been for several years. As expressed recently by Mr. George A. Stahl, president of the Colorado Metal Mining Association, "We have been stuck at the bottom of the hill, during 1922 we got going in low gear, this year we are in intermediate, by 1924 we expect to be going over the crest in high."

The mining or quarrying of the common non-metallic minerals such as fluorspar, feldspar, mica, barytes, kaolin, and so on, is bound to increase. There are known deposits of all these which have scarcely been touched, as well as of various clays and building stones. The deposits of these minerals in the eastern and middle states are rapidly becoming depleted so that the consumers will have to look to Colorado and other western states for their raw material.

Sooner or later the oil shales will form the basis of one of the largest industries in the state, but this will not be until some one actually demonstrates that shale oil can be produced commercially at a cost comparable to that of petroleum. The mining and retorting of oil shale and the refining of crude shale oil present many interesting problems, none of which have yet been worked out in practice with Colorado shales.

HISTORICAL NOTE

The Bureau of Mines of the State of Colorado was established by an act of the Tenth General Assembly, approved March 30, 1895. This act repealed a previous act creating an "Inspector of Metalliferous Mines," which was passed in 1889. The Bureau of Mines law established the office of Commissioner of Mines, provided for in the State Constitution, and charged him, among other things, with the supervision of metal mine inspection and the enforcement of laws relating to safety and health in metal mines. Subsequently this was broadened to include "any ore mill, sampling works, smelter, metallurgical plant, rock quarry, clay pit, railroad tunnel, rock excavation or mine of whatsoever kind or character, except coal mines." The Commissioner of Mines was also charged, "as he has opportunity and means," to collect mineral specimens and exhibit the same, to collect books relating to mining and geology, to collect and preserve data regarding mining methods, mining costs, milling, metallurgy, geology, mineral deposits of all kinds, and so on. Aside from the purchase of the Elsner collection of minerals, very little "opportunity and means" has been granted to the Commissioners for anything except inspection work. The present activities of the Bureau of Mines are treated elsewhere in this report.

COMMISSIONERS OF MINES

Harry A. Lee.....	May 11, 1895-May 10, 1903
E. L. White.....	May 10, 1903-May 10, 1907
T. J. Dalzell	May 10, 1907-May 10, 1911
T. R. Henahen	May 10, 1911-May 10, 1915
Fred Carroll	May 10, 1915-June 1, 1919
Horace F. Lunt	June 1, 1919-

Note:—Mr. John T. Joyce has been appointed to succeed Mr. Lunt on June 1, 1923.

PUBLICATIONS OF THE BUREAU OF MINES

BULLETINS

Bulletin No. 1, Recommendations for Safety Appliances in Mining, Harry A. Lee, Commissioner of Mines, 1896.

Bulletin No. 2, Precious Metal Production for the year 1898, Harry A. Lee, Commissioner of Mines, 1899.

Bulletin No. 3, Mining Laws Relative to Bureau of Mines, Precious Metal Production, Harry A. Lee, Commissioner of Mines, 1899.

Bulletin No. 4, Precious Metal Production, Harry A. Lee, Commissioner of Mines, 1901.

Bulletin No. 5, Precious Metal Production, Harry A. Lee, Commissioner of Mines, 1902.

Bulletin No. 6, Regulations Relative to the Construction, Equipment and Operation of Metalliferous Mines, Mills and Metallurgical Plants, Recommendations and Mineral Production for 1905, E. L. White, Commissioner of Mines, 1906.

Bulletin No. 7, Federal and State Laws Relating to Mining, Fred Carroll, Commissioner of Mines, 1916.

Supplement to Bulletin 7, Mining Laws Enacted by the Twenty-first General Assembly, Fred Carroll, Commissioner of Mines, 1917.

Supplement No. 2 to Bulletin No. 7, Amendments to the Mining Laws Enacted by the Twenty-second General Assembly, Horace F. Lunt, Commissioner of Mines, 1919.

Supplement No. 3 to Bulletin No. 7, Amendments to Laws Relating to Mining Enacted by the Twenty-third General Assembly, Horace F. Lunt, Commissioner of Mines, 1921.

Bulletin No. 8, The Oil Shales of Northwestern Colorado, Horace F. Lunt, Commissioner of Mines, 1919.

Bulletin No. 9, Mine Safety Standards, Horace F. Lunt, Commissioner of Mines, 1920.

REPORTS

Report of Bureau of Mines, Colorado, from its establishment in May, 1895, to November 30, 1896, Harry A. Lee, Commissioner of Mines, 1896.

Report for the Year 1897, Harry A. Lee, Commissioner of Mines, 1898.

Report for the Year 1898, Harry A. Lee, Commissioner of Mines, 1899.

Biennial Report for the Years 1899-1900, Harry A. Lee, Commissioner of Mines, 1900.

Biennial Report for the Years 1901-1902, Harry A. Lee, Commissioner of Mines, 1903.

Biennial Report for the Years 1903-1904, E. L. White, Commissioner of Mines, 1905.

Biennial Report for the Years 1905-1906, E. L. White, Commissioner of Mines, 1907.

Biennial Report for the Years 1907-1908, T. J. Dalzell, Commissioner of Mines, 1909.

Biennial Report for the Year 1909-1910, T. J. Dalzell, Commissioner of Mines, 1911.

Biennial Report for the Years 1911-1912, T. R. Henahen, Commissioner of Mines, 1913.

Biennial Report for the Years 1913-1914, T. R. Henahen, Commissioner of Mines, 1914.

Biennial Report for the Years 1915-1916, Fred Carroll, Commissioner of Mines, 1916.

Biennial Report for the Years 1917-1918, Fred Carroll, Commissioner of Mines, 1919.

Annual Report for the Year 1919, Horace F. Lunt, Commissioner of Mines, 1920.

Annual Report for the Year 1920, Horace F. Lunt, Commissioner of Mines, 1921.

Annual Report for the Year 1921, Horace F. Lunt, Commissioner of Mines, 1922.

At the time this report goes to press, there are available for distribution copies of the Biennial Report for 1915-1916, Annual Reports for 1919, 1920 and 1921, Bulletins 7, 8 and 9. The price of Bulletin 7, with supplements, is 50 cents, all other available publications are free. The supply of publications not mentioned above is exhausted, but copies may be found in many of the public, state and college libraries throughout the country.

TABLE I

PRODUCTION OF THE PRINCIPAL METALS IN COLORADO IN 1921 AND 1922

Compiled from figures by C. W. Henderson, Mineral Geographer, U. S. Geological Survey. Figures for 1922 are preliminary and subject to correction.

	GOLD				SILVER				COPPER				LEAD				ZINC				Increase or Decrease		County		
	1921		1922		1921		1922		1921		1922		1921		1922		1921		1922						
	Fine Ounces	Value	Fine Ounces	Value	Fine Ounces	Value	Fine Ounces	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Total Value	1921	1922		
Boulder	1,646.78	\$ 34,042	2,276	\$ 47,049	112,957	\$ 120,687	120,687	\$ 39	302	\$ 39	20,000	2,700	140,336	\$ 6,315	87,000	\$ 4,785	140,336	\$ 1,950	17,000	\$ 10,089	\$ 1,53,353	\$ 17,521	\$ +1,126,966	Boulder	
Chaffee	1,549.65	32,034	969	20,031	27,641	26,187	26,187	8,357	1,078	8,357	20,000	2,700	318,666	14,340	652,000	35,860	39,000	\$ 1,950	17,000	\$ 10,089	7,003	9,467	\$ +1,784	Chaffee	
Clear Creek	1,879.42	38,851	1,789	36,982	131,867	196,222	196,222	21,519	2,776	21,519	14,000	1,890	1,200,931	54,042	957,000	62,635	217,000	10,850	800,000	45,600	23,836	333,329	\$ +9,443	Clear Creek	
Costilla	2.52	52	.....	.....	19,191	19,191	14,520	.....	37,690	4,862	37,690	32,000	4,320	106,022	4,771	397,509	21,863	.....	.....	.....	2,908	40,889	.....	Costilla
Custer	8.90	184	9	186	19,191	19,191	14,520	.....	744	96	744	24,000	3,240	18,624	838	85,600	4,708	.....	.....	.....	1,729	38,755	.....	Custer
Dolores	89.78	1,856	79	1,633	14,499	28,994	28,994	744	96	744	24,000	3,240	18,624	838	85,600	4,708	1,729	38,755	Dolores
Douglas	2.27	47	682,560	682,560	583,737	583,737	1,833,078	236,467	1,833,078	1,600,000	216,000	12,578	566	308,000	16,940	11,000,000	627,000	9,843,06	1,515,811	4,7	Douglas
Eagle	3,130.98	64,723	3,489	72,124	682,560	682,560	583,737	583,737	1,833,078	236,467	1,833,078	1,600,000	216,000	12,578	566	308,000	16,940	.....	.....	.....	.....	.....	1,613,96	Eagle
Fremont	.....	.....	30	620	.....	.....	177	177	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	797	797	797	Fremont
Gilpin	1,916.13	39,610	2,514	61,969	17,963	17,963	43,910	43,910	13,186	1,701	13,186	24,000	3,240	91,644	4,124	240,000	13,200	.....	.....	.....	6,398	11,219	.....	Gilpin
Gunnison	881.54	18,223	448	9,261	10,370	10,370	3,808	3,808	.....	.....	.....	.....	.....	61,955	2,338	13,291	731	.....	.....	.....	3,931	1,380	.....	Gunnison
Hinsdale	165.68	3,425	64	1,323	32,039	32,039	50,100	50,100	9,357	1,207	9,357	14,000	1,890	65,756	2,959	112,000	6,160	.....	.....	.....	3,630	59,743	.....	Hinsdale
Lake	14,951.84	309,144	19,734	407,938	1,043,497	1,043,497	962,000	952,000	1,107,295	142,841	1,107,295	870,000	117,450	3,537,889	159,205	5,000,000	275,000	1,821,000	91,050	9,000,000	513,000	1,745,77	2,265,388	Lake
La Plata	2,185.63	45,181	1,563	32,310	20,327	20,327	10,700	10,700	.....	.....	.....	.....	.....	3,734	168	.....	.....	.....	.....	6,576	4,910	.....	La Plata	
Mineral	184.60	3,816	79	1,633	192,468	192,468	119,000	119,000	1,899	245	1,899	.....	.....	156,778	7,055	167,000	9,185	.....	.....	.....	2,03,54	122,918	.....	Mineral
Montrose	.....	.....	.....	.....	.....	17,000	17,000	.....	.....	62,304	8,411	62,304	.....	.....	.....	.....	.....	.....	.....	.....	2,541	2,541	2,541	Montrose
Ouray	3,542.45	73,229	3,340	69,044	730,970	730,970	533,300	533,300	85,039	10,970	85,039	55,000	7,425	1,208,399	54,378	1,450,000	79,760	.....	.....	.....	8,647	68,915	.....	Ouray
Park	1,995.47	41,250	6,853	141,664	47,547	47,547	15,530	15,530	7,660	974	7,660	.....	.....	654,090	29,434	163,000	8,416	.....	.....	1,925	1,656	9,404	1,656	Park
Pitkin	474,226	474,226	525,200	526,200	233	30	233	2,395,622	107,803	3,500,000	192,500	283,000	14,150	5,628	7,700	1,124,924	Pitkin
Routt	.....	.....	.....	.....	.....	82	82	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	82	82	82	Routt
Saguache	89.78	1,856	238	4,920	90,871	90,871	63,500	63,500	49,512	6,387	49,512	42,000	5,670	198,686	8,941	110,000	6,050	.....	.....	.....	1,085	8,410	.....	Saguache
San Juan	400.16	8,272	1,243	25,695	64,179	64,179	77,634	77,634	28,558	3,684	28,558	110,000	14,850	557,655	25,090	1,600,000	88,000	1,300,000	74,100	1,0125	28,079	1,904	San Juan
San Miguel	71,054.17	1,468,820	55,658	1,150,553	1,776,963	1,776,963	2,283,000	2,283,000	921,573	118,883	921,573	660,000	89,100	8,436,244	379,631	6,900,000	379,500	.....	.....	.....	3,44,97	3,90,153	.....	San Miguel
Summit	17,358.40	358,830	13,609	281,323	104,198	104,198	118,000	118,000	27,550	3,564	27,550	94,000	12,690	504,957	22,723	415,000	22,825	677,000	38,589	4,89,36	4,73,427	5,878	Summit
Teller	207,619.84	4,291,883	195,999	4,051,659	37,335	37,336	26,900	25,900	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,32,218	4,07,559	25,659	25,659	Teller
Total	330,658.99	\$ 0,835,328	309,983	\$ 6,407,917	6,631,657	6,809,188	\$ 5,809,188	4,153,442	\$ 535,794	3,621,304	\$ 488,876	19,660,466	\$ 884,721	22,147,400	\$ 1,218,107	2,360,000	\$ 118,000	22,954,000	\$ 1,308,378	\$ 1,400,500	\$ 15,232,466	\$ +1,26,966			
Decrease, 1922	.....	.....	20,675	427,411	.....	.....	.....	.....	.....	.....	632,138	\$ 46,918	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unit prices	.....	.....	\$ 20.67	.....	.....	.....	.....	.....	.....	.....	.....	\$ 0.125	.....	.....	.....	.....	.....	.....	.....	.....	.....	\$ 0.057		

Includes placer production.

PRODUCTION

Gold, Silver, Copper, Lead and Zinc.

The production of gold, silver, copper, lead and zinc for 1921 and 1922 is shown in Table I. The figures for 1921 are final; those for 1922 are preliminary and subject to correction.

The gold dredges in Summit and Park counties, the production of which is included with that of the lode mines in Table 1, recovered bullion containing about 17,154 ounces of gold and 4,170 ounces of silver.

Miscellaneous.

Plastic clay, fire clay, gypsum, lime, mica, graphite, sandstone, marble, fluorspar and other non-metallic minerals have been produced to meet local demands.

There was no production of manganese, tungsten or molybdenum. About 500 tons of carnotite ore containing 2.5 per cent uranium oxide and 3.5 per cent vanadium pentoxide was produced during the year.

Acknowledgement.

Thanks are due to Philip S. Smith, Acting Director, and C. W. Henderson, Mineral Geographer, of the United States Geological Survey, for the production statistics regarding the common metals.

ACCIDENTS

The accidents which occurred, during 1922, to workers in and about the mines, mills, smelters and quarries are tabulated in the following tables according to the U. S. Bureau of Mines system of classification.

NOTES ON THE FATAL ACCIDENTS OF 1922,

Underground.

January 9, in a mine near Leadville, Dee Filson, age 45, a miner, while shoveling in a stope was caught under a fall of ground and instantly killed. His death was due to the failure of his employer to properly timber the stope after having been ordered to do so by the state mine inspector.

March 26, in a mine in Ouray county, Louis Aspurus, age 27, a contract miner, fell while climbing a raise, fractured his skull, and died in a few hours. There were no eye witnesses. The raise was in first-class condition so that it is presumed that he lost his hold on the ladder, possibly by reason of dizziness.

May 22, in a mine near Telluride, John Steiner, a mucker, while shoveling in a stope, was struck by a slab of rock from the roof. He was injured so that he died the following day. His death was due to his failure to obey the superintendent's order to bar down the loose rocks before working under them.

June 11, in a mine in the Cripple Creek district, John Zanzo, age 59, a leaser, was shoveling in a stope when he was hit by a falling rock and knocked into a chute 35 feet below. His skull was fractured and he died a few hours later. He had been warned to stay out of the place which was known to be dangerous, so his death was his own fault.

June 12, in a mine in Lake county, Martin Nelson, age 47, a miner, was suffocated by carbonic acid gas. He and his partner were working in a raise which unexpectedly broke through into old water-filled workings. Nelson went back toward the breast of the tunnel at the foot of the raise while his partner struggled out through the water. The water evidently pulled a quantity of gas from the old workings which caused Nelson's death. If he and his partner had kept a long hole ahead of the back of the raise this accident would have been avoided.

June 15, in a mine in the Cripple Creek district, Thomas Bailey, age 19, a mucker, while shoveling in a stope, was caught under a fall of rock. His neck was broken causing instant death. Had he obeyed the standing orders to bar down loose rock the accident would not have occurred.

June 15, in a mine in the Cripple Creek district, A. M. Colgin, age 52, a machine man, while drilling, was caught under a slab of rock which fell from the roof and injured so that he died a few hours later. Had he obeyed the standing orders to bar down loose rock the accident would not have occurred.

July 19, at a mine near Telluride, John E. Martinez, age 22, a chute blaster, was drawn into a chute by a run of ore and smothered. His death was due to his own carelessness in not keeping hold of a rope which was provided as a safeguard against just such accidents.

August 2, at a mine in Saguache county, Louis Mondragon, age 24, a miner, was struck by a rock which rolled down from above and fractured his skull, killing him instantly. It is supposed that the concussion from blasting in an adjoining stope caused the rock which killed him to start. Evidently he was in a place which was insufficiently safeguarded.

August 6, in a mine in Eagle county, Charles Grose, age 34, a timberman, was caught under a cave in a raise which was being retimbered. After several hours of strenuous labor he was taken out and rushed to a hospital, but he had received internal injuries which resulted in his death the following day. The accident was due to the deceased's disregard of orders to put in false sets before removing the old timbers.

August 6, in a mine near Telluride, Matt D. Briggs, age 33, a machine man, was blown to pieces while loading holes. The primer fell out of a hole he was loading and it is believed that he rammed it back too forcibly, causing the cap to strike the side of the hole.

August 31, at a mine in Summit county, Joe Chondrich, age 44, a mucker, was struck by a falling rock which broke his leg and cut an artery so that he bled to death. If there had been anyone present who knew anything of first aid his death would have been prevented.

December 9, in a mine in Boulder county, F. J. Whiteside, age 40, a miner, was killed by the premature explosion of a round of holes which he was blasting. There were no witnesses, but it is probable that he had trouble in spitting his fuses and staid too long.

December 30, in a mine in La Plata county, James H. Clark, age 38, a drift contractor, while engaged in shoveling was caught by a slab of rock from the wall and received injuries which caused

his death two days later. His failure to bar down or timber up the loose rock before working under it caused his death.

Shaft.

February 8, at a mine in the Cripple Creek district, Gus Britenbaugh, age 45, while working in the bottom of a shaft, had his skull fractured by a small rock which fell from the bucket which was being hoisted above him. It is thought that he failed to steady the bucket as it left the bottom and that the rock was jarred out when it struck the crosshead, 40 feet above.

Surface.

October 13, at a mine in Custer county, John Mahoney, age 60, a miner, fell into an open pit and was killed by the shock. The accident would have been prevented if the pit had been properly railed or fenced.

Mill.

January 20, at a reduction mill near Colorado Springs, Henry H. Brunner, age 29, an electrician, was electrocuted while working in a transformer house. His own carelessness was the cause of his death.

Smelter.

May 28, at a smelter in Fremont county, Frank Henderson, age 29, a mechanic's helper, was electrocuted. There were no eye witnesses, but it is presumed that he carelessly took hold of a live wire to remove it from a pole.

Quarry.

May 21, at a quarry in Fremont county, John Machla, age 34, a quarryman, had his heel crushed by a stone falling on it. He was taken to a hospital immediately but infection set in and caused his death a few days later.

July 6, at a cement plant in Fremont county, Tony DeCallis, age 29, a fireman, stepped on a nail. He did not report for treatment for two days, by which time blood poisoning had set in and caused his death six days later. Had he had the slight injury attended to at once his life would have probably been saved.

Placer.

March 6, at a placer mine near Parker, G. M. Hendricks, age 50, a placer miner, while working alone in a small excavation, had his head caught under a small quantity of gravel which fell from

the roof and was smothered. Insufficient timbering was the cause of the accident.

Dredge.

May 21, at a dredge in Park county, Jesse E. Jarrell, age 32, an oiler, fell into the dredge pond and was drowned. There were no witnesses, but it is supposed that the bank caved in with him. His death was probably due to his own carelessness.

September 7, at a dredge in Summit county, Evan A. Neff, age 32, a dredgemaster, was electrocuted while working in the switch house. The accident was probably due to his own carelessness.

TABLE II

	Employment Days of 1921		Killed 1921		1922		Serious Injury (Time Lost Over 14 Days) 1921		1922		Slight Injury (Time Lost Under 14 Days) 1921		1922	
	No. of Accidents	Rate Per 10,000 Days	No. of Accidents	Rate Per 10,000 Days	No. of Accidents	Rate Per 10,000 Days	No. of Accidents	Rate Per 10,000 Days	No. of Accidents	Rate Per 10,000 Days	No. of Accidents	Rate Per 10,000 Days	No. of Accidents	Rate Per 10,000 Days
Underground	859,185	774,065	17	19,78	15	1937	138	1,501	171	2,209	266	3,095	195	2,519
Surface	285,030	263,354	1	.0350	1	.0379	.55	1,929	.56	2,126	.65	2,280	.38	1,442
Mills	207,723	397,981	....	....	1	.0251	17	.8183	17	.4271	22	.1059	.32	.8040
Smelters	395,109	346,700	1	.0253	1	.0288	.26	.658	.24	.6922	40	1,102	.54	1,557
Quarries	151,554	150,301	1	.0659	2	.0665	.21	1,385	.21	1,397	.60	3,958	.60	3,991
Placer Mines (Dredges)	12,515	20,246	....	....	3	1,481	2	1,598	3	1,481	6	4,795	.15	7,418
Oil Shale	11,259	12,777	7	6217	....	....	8	7,105	4	3,13	1	.8881	2	1,565

TABLE III

CLASSIFICATION ACCORDING TO CAUSE OF ALL ACCIDENTS IN THE METAL MINING AND QUARRYING INDUSTRY IN THE STATE OF COLORADO DURING THE YEARS 1921 AND 1922. Continued.

CLASSIFICATION ACCORDING TO CAUSE OF ALL ACCIDENTS IN THE METAL MINING AND QUARRYING INDUSTRY IN THE STATE OF COLORADO DURING THE YEARS 1921 AND 1922.—Concluded.

	Serious Injuries (Time lost over 14 days)						Slight Injuries (Time lost under 14 days)	
	Permanent Total		Disability 1921 1922		Temporary Disability 1921 1922			
	Fatal 1921	1922	1921	1922	1921	1922		
5. Haulage—								
(a) Hand and animal.....								
(b) Mechanical.....								
6. Falling into quarry from surface, benches or face.....								
7. Falling from hoist, derricks, ladders, etc.....								
8. Drilling and channeling (by machine or hand).....								
9. Electricity (shock or burns).....								
10. Machinery—								
(a) Cables and attachments.....								
(b) Pumps, masts, booms and attachments.....								
(c) Pumps and hoisting engines.....								
11. Flying pieces of rock from sledging.....								
12. Nails, splinters, etc.....								
13. Boiler and air tank explosions.....								
14. Animals.....								
15. Other causes.....								
Total.....								
OUTSIDE WORKS ¹								
16. Haulage—								
(a) Hand and animal.....								
(b) Mechanical.....								
17. Railway cars and locomotives.....								
18. Crushers.....								
19. Cranes, derricks, etc.....								
20. Other machinery.....								
21. Falls of persons.....								
22. Hand tools.....								
23. Electricity.....								
24. Nails, splinters, etc.....								
25. Flying pieces of rock from sledging or crushing.....								
26. Flying or falling objects (rocks, timbers, etc.).....								
27. Burns.....								
28. Other causes.....								
Total.....								

¹Includes oil shale accidents.

TABLE IV

CLASSIFICATION ACCORDING TO CAUSE AND OCCUPATION OF THE FATAL ACCIDENTS THAT OCCURRED IN THE METAL MINING AND QUARRYING INDUSTRY OF COLORADO IN THE YEARS 1921 AND 1922.

CLASSIFICATION ACCORDING TO CAUSE AND OCCUPATION OF THE FATAL ACCIDENTS THAT OCCURRED IN THE METAL MINING AND QUARRYING INDUSTRY OF COLORADO IN THE YEARS 1921 AND 1922.—Continued.

SURFACE ACCIDENTS

	Superintendents and Foremen	Engineers	Blacksmiths and Firemen	Carpenters and Topmen	Electricians	Others
	1921	1922	1921	1922	1921	1922
22. Haulage
23. Railway cars and locomotives
24. Run or fall of ore in or from ore bins
25. Fall of persons	1
26. Nails and splinters
27. Hand tools, axes, bars, etc.
28. Electricity
29. Machinery
30. Other causes	1
Total	1

MILLS

	Superintendents and Foremen	Grinding Machinery Men and Millmen	Concentrator Men	Carpenters and Mechanics	Laborers	Aerial Tram Men and Conveyor Men
	1921	1922	1921	1922	1921	1922
1. Haulage system
2. Railway cars and locomotives
3. Crushers, rollers or stamps
4. Tables, jigs, etc.
5. Other machinery
6. Falls of persons
7. Suffocation in ore bins
8. Falling objects (rocks, timbers, etc.)
9. Cyanide or other poisoning	1
10. Scalding (steam or water)
11. Electricity
12. Hand tools, axes, bars, etc.
13. Nails, splinters, etc.
14. Flying pieces of rock from sledging or crushing
15. Other causes	1
Total

SMELTERS

Feeders

QUARRIES, CLAY PITS AND OIL SHALE MINES

Superintendents and Foremen 1921	Teamsters 1921	Teamsters 1922	Drillmen 1921	Drillmen 1922	Laborers 1921	Laborers 1922
1. Haulage						
2. Machinery						
3. Other causes						
Total						

PLACERS AND DREDGES

OPERATING MINES IN BOULDER COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Alhambra	Caribou	Gilbert Lehner	832 So. Pearl St., Denver	Gold, Silver (c)
Bellville (a)	Rowena	H. D. Norstrom	Jamesstown	Gold, Silver, Lead
Big Horn	Salina	Pomeroy and Johnson	Salina	Gold, Silver (c)
Black Diamond (a)	Sugar Loaf	O. A. Clayton	Sugar Loaf	Gold, Silver
Blue Jay	Jamestown	H. S. Vickery and		
		Climax Star and Radium Co.		
Blue Ribbon (a)	Crisman	Carlson and Co	Jamestown	Fluorspar
Bluestone	Jamestown	W. P. Sinclair	Crisman	Gold, Silver
Blue Vista (a)	Caribou	Mrs. G. W. Gordon	944 Inca St., Denver	Gold, Silver (c)
Cash	Caribou	Caribou Metals Co	Jamestown	Gold, Silver (c)
Castle	Magnolia	Slevers Fincher	Boulder	Gold, Silver, Lead
Champion	Gladiator (a)	Springdale	3046 W. 26th St., Denver	Gold, Silver
Clipper	John L. Fawcett	John L. Fawcett	Springdale	Gold, Silver (c)
Congo Chief	Crisman	Clipper Leasing Co.	Jamestown	Gold, Silver (c)
Dixie	Caribou	Allied Gold Mining Co.	2341 12th St., Boulder	Gold, Silver
Dolly Lide (a)	El Dorado	S. C. Mathiesen and Assoc.	1216 Pearl St., Boulder	Gold, Silver
Doris and others (a)	Sunshine	Gunn Brothers	Fort Collins	Gold, Silver (c)
Earl-Niagra	Jamestown	G. W. Gordon	Salina	Gold, Silver (c)
East Side	Jamestown	Earl-Niagra Brothers	Jamestown	Gold, Silver (c)
Emancipation	El Dorado	Sullivan Brothers	Springdale	Gold, Silver (c)
Eureka (2)	Salina	A. S. Temple	Eldora	Gold, Silver (c)
Fortune	Boulder	Up-to-date Mining Co.	Boulder	Gold, Silver (c)
Fourth of July (a)	Jamestown	Geo. P. and Julia E. Sale	Boulder	Gold, Silver (c)
Franklin (East) (a)	Jamestown	William Brugger	Jamestown	Gold, Silver (c)
Franklin (West) (a)	Sugar Loaf	J. P. H. Foyle	Sugar Loaf	Gold, Silver
Gilpin County and Fairview	Sugar Loaf	Coughlin and Renshaw	Sugar Loaf	Gold, Silver
Golden Age (a)	Nederland	Fairview Mining Corporation	2144 Franklin St., Denver	Gold, Silver (c)
	Springdale	Ward and Cottrell	811 Central Savings Bank	
			Bldg., Denver	Gold Silver, Lead, Copper (c)
Golden Reward (m)	Nederland	H. C. Gilbert		Gold
Goldsmith Maid	Salina	Newell and Assoc.		Gold, Silver, Lead, Zinc
Gordova	Jamestown	Mrs. Geo. W. Gordon and Co.	Jamestown	Gold, Silver, Lead
Grant County	Caribou	Caribou Hill Mining Co.	E. & C. Bldg., Denver	Gold, Silver, Lead
Great Britain	Waltistown	Magor & Co.	Wallstreet	Fluorspar
Green Spar (a)	Jamestown	Berryman & Co.	Jamestown	Gold, Silver (c)
Hope (a)	Springdale	J. H. Wheeler	Springdale	Gold, Silver (c)
Hornoldt	Gold Hill	W. L. McCaslin	Farmers Nat'l Bk., Longmont	Gold, Silver (c)
Huron (a)	Ward	Humboldt M. & M. Co.	Pueblo	Gold, Silver
Indian Point	El Dorado	Huron Gold Ores Co.	404 Cooner Bldg., Denver	Gold, Silver (c)
John J.	Jamestown	John R. Leask	Jamestown	Fluorspar (c)
	Jamestown	Federal Reserve Mining Co.	1114 16th St., Denver	Gold, Silver

Kaiser (a).....	Jamestown.....	William Brugger.....	Salina.....	Gold, Silver (c)
Little Johnnie (a).....	Salina.....	Little Johnnie M. & M. Co.....	Boulder.....	Gold, Silver (c)
Logan.....	Crisman.....	Logan Metals Company.....	Eldora.....	Gold, Silver (c)
Lost Lake (a).....	Eldora.....	W. R. Davis.....	Missoula M. & M. Co.....	Gold, Silver (c)
Missoula (a).....	Ward.....	W. M. Bloomer.....	2210 Lowell Blvd., Denver.....	Gold, Silver (c)
Moltke (a).....	Ward.....	W. W. Gunter.....	Eldora.....	Gold, Silver (c)
Morning Star.....	Eldora.....	J. L. C. Hays & Co.....	Gold Hill.....	Gold, Silver (c)
Mountain Chief.....	Rowena.....	Provident M. & M. Co.....	2684 So. Broadway, Denver.....	Gold, Silver (c)
Myrtle.....	Gold Hill.....	J. E. R. Terry.....	Jamestown.....	Fluorspar
Nations Treasure (a).....	Jamestown.....	Thos. Kiley and Assoc.....	Sugar Loaf.....	Gold, Silver, Lead
Nighthshade.....	Sugar Loaf.....	M. S. Brandt.....	Boulder.....	Gold, Silver
Nil Desperandum.....	Sunshine.....	Kent & Saxton.....	Wallstreet.....	Gold, Silver, Lead
Ogallala (a).....	Nederland.....	Ophir Gold and Silver Mg. and Red, Co.....	Nederland.....	Gold, Silver (c)
Pay Rock (a).....	Eldora.....	The Pay Rock.....	Caribou.....	Gold, Silver (c)
Pine Knot.....	Crisman.....	Bender & Company.....	Crisman.....	Gold, Silver (c)
Poorman.....	Caribou.....	Jark & Company.....	Boulder.....	Gold, Sil., Lead (c)
Potosi (a).....	Caribou.....	Potosi-Caribou Mg. Co.....	653 Broad St., Newark, N. J.....	Gold, Sil., Lead (c)
Ready Money (a).....	Greendale.....	Left Hand Mining Co.....	Boulder.....	Gold (c)
Red Signe.....	Sugar Loaf.....	C. A. Barr.....	Boulder.....	Gold, Silver
Revenge (a).....	Nederland.....	Guy Miller.....	Nederland.....	Gold, Silver
Richmond (East).....	Salina.....	Fred Walters & Co.....	Salina.....	Gold, Silver
Richmond (West).....	Salina.....	H. H. McDaniel.....	Springdale.....	Gold, Silver
Rip Van Dam (a).....	Springdale.....	F. L. Morris.....	Jamestown.....	Gold, Silver
St. Louis.....	Glendale.....	Louis Vanchair & Co.....	Nederland.....	Gold, Silver (c)
September Morn (a).....	Caribou.....	Hay Stack Mt. Mines Co.....	Nederland.....	Silver (c)
Shirley.....	Eldora.....	J. B. Rowley.....	Springdale.....	Gold, Silver (c)
Skunk Tunnel (a).....	Jamesstown.....	J. V. Sybrandt.....	305 Denham Bldg., Denver.....	Gold, Silver
Smuggler.....	Jamesstown.....	Smuggler-Ballarat M. & M. Co.....	Gold Hill.....	Gold (c)
Snowbound.....	Gold Hill.....	Snowbound Mining Co.....	Eldora.....	Gold, Silver (c)
Sophia.....	Eldora.....	J. Frank J. Anderson.....	Clayton, Illinois.....	Gold, Silver (c)
Tarbox Tunnel (a).....	Ward.....	J. L. Tarbox.....	Boulder.....	Gold, Sil., Lead (c)
Tippecanoe (a).....	Rowena.....	J. W. Pherson.....	Gold Hill.....	Gold, Silver (c)
Two Sisters (a).....	Gold Hill.....	S. N. Davidson.....	Jamestown.....	Fluorspar
Violet Ray, etc.....	Jamesstown.....	Limax Spear & Radium Co. and Wano.....	405 Gas & Elec. Bldg., Denver Gold	Gold, Silver (c)
White Raven.....	Ward.....	Wano Mining & Milling Co. and Chris. E. Saunders.....	Jamestown.....	Silver, Lead
Wigwam.....	Caribou.....	Ernest Graham & Co.....	Ward.....	Gold, Sil., Lead (c)
Wood Mountain.....	Wallstreet.....	Wigwam Mining Co.....	Caribou.....	Gold, Silver
Yellow Pine.....	Crisman.....	Wood Mountain Mines Co. and Yellow Pine Mines & Red, Co.....	944 Pearl St., Boulder.....	Gold, Silver, Lead

(a) Operated for part of the year only.

(c) No production in 1922.

(m) Mill operated in connection with mine.

OPERATING MINES IN CHAFFEE COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Gladstone (m)	Buena Vista	Gladstone Mines Co.	Buena Vista	Gold, Silver, Lead, Copper, Zinc
Hershberger Tunnel (a)	Salida	Iowa M. and Explor. Co.	Creston, Iowa	Gold, Silver (c)
Independence	Turret	Universal M. & Milling Co.	421 Thatcher Bldg., Pueblo	Copper (c)
Lilly	Garfield	Garfield M. & Red. Co.	Garfield	Gold, Silver, Lead
Madonna	Monarch	Colorado Mines Exploring Co.	233 Broadway, New York	Gold, Silver, Lead, Copper, Zinc
Marion (a)	Buena Vista	Marion M. & Dev. Co.	Marion, Indiana	Gold, Silver (c)
Mount Harvard (a)	Buena Vista	Mount Harvard Mining Co.	Buena Vista	Cop., Lead, Zinc (c)
Rarus Warrior	Buena Vista	Rarus-Warrior Mines Co.	Buena Vista	Gold, Silver
Speedy (a)	Fisher	Myer and Assoc.	Buena Vista	Silver, Lead

OPERATING MINES IN CLEAR CREEK COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
A. C. A. (a)	Empire	McDonough and Ketterer	Empire	Gold, Sil., Cop. (c)
Albro	Dumont	Albro Leasing Co.	Dumont	Gold, Sil., Cop. (c)
Alexander (a)	Idaho Springs	George Miner	Idaho Springs	Gold, Silver
Argo	Idaho Springs	Stude-Marie Mining Co.	Idaho Springs	Gold, Sil., Lead (c)
Atlas	Colorado Extension Mining Co.	Colorado Extension Mining Co.	50 Congress St., Boston	Gold, Sil., Lead (c)
Backbone	Georgetown	Georgetown	50 Congress St., Boston	Mass. Gold, Sil., Cop. (c)
Black Bear	Georgetown	Georgetown	50 Congress St., Boston	Mass. Gold, Sil., Cop. (c)
Blue Bell (a)	Idaho Springs	Buxton Bros. and Garrett	50 Congress St., Boston	Gold, Sil., Lead (c)
Blue Bird (a)	Idaho Springs	E. M. Mosaic	50 Congress St., Boston	Gold, Sil., Lead (c)
Buster (a)	Idaho Springs	Silver Plume	50 Congress St., Boston	Gold, Sil., Lead (c)
Calvin	Idaho Springs	Silver Plume	50 Congress St., Boston	Gold, Sil., Lead (c)
Capital (a)	Georgetown	Social Six Mining Co.	50 Congress St., Boston	Gold, Sil., Lead (c)
Centennial (a)	Georgetown	Capital M. & M. Co.	Georgetown	Gold, Sil., Lead (c)
Charter Oak (a)	Idaho Springs	Western Mines Synd.	Idaho Springs	Gold, Silver (c)
Chicago	W. D. Fenicle	W. D. Fenicle	Idaho Springs	Gold, Silver (c)
Cleveland Tunnel	Idaho Springs	Sampson Benny	Idaho Springs	Gold, Silver, Lead, Zinc
Combination	Roanoke M. & M. Co.	Grant	Foster Bldg., Denver	Gold, Silver, Lead, Zinc
Corbett	Idaho Springs	Quartz Hill Cons. M. Co.	Idaho Springs	Gold, Silver, Lead, Copper
	Idaho Springs	W. L. Stephenson	Idaho Springs	Gold, Silver, Lead, Copper

County Treasurer (a)	Silver Plume.....A. L. McGrath & Co.....	Gold, Silver, Lead
Crown Prince (a)	Empire.....Crown Prince Cons. Mines Co.....	948 Gas & Elec. Bldg., Denver.....Gold, Silver (c)
Dead Jack.....	Empire.....Teagarden & Co.....	Georgetown.....Gold, Silver, Lead
Denver Tunnel.....	Empire.....Metals Tunnel Co.....	Idaho Springs.....Gold, Silver, Lead
Dives, Seven-Thirty Cora, City, Diamond Mill (m)	Silver Plume.....East Butte Copper M. Co.....	Zinc
Dominion.....	Idaho Springs.....Rice Bros. Leasing Co.....	317 Railway Exchange Bldg., Denver.....Gold, Silver, Lead
Dorit Perkins (a)	Idaho Springs.....F. L. Patrick.....	Idaho Springs.....Gold, Silver, Cop.
East Griffith (a)	Georgetown.....L. A. Griffith & Co.....	Georgetown.....Gold, Silver, Lead
Edgar (a)	Idaho Springs.....Big Five Mining Co.....	405 Interstate Bldg., Denver.....Gold, Silver, Lead
Edgar Leeper (a)	Dumont.....Edgar Leeper Group.....	Dumont.....Gold, Silver (c)
Empress Tunnel (m)	Empire.....Empire Cons. Mines Inc.....	Empire.....Gold, Sil., Cop. (c)
Esmeralda.....	Idaho Springs.....Ford & Company.....	Idaho Springs.....Gold, Sil., Lead (c)
Esperanza Tunnel.....	Silver Plume.....James Hamill.....	Savoy Hotel, Denver.....Gold, Sil., Lead (c)
Eva, (a)	Idaho Springs.....Stude-Marie Mining Co.....	Idaho Springs.....Gold, Silver, Lead
Everett (a)	Silver Plume.....Michael O'Hay.....	Silver Plume.....Gold, Silver, Lead
Food Cliff (a)	Empire.....Food Cliff Co.....	2064 Live Oak St., Dallas, Tex.....Gold, Sil., Cop. (c)
Fraction.....	Idaho Springs.....Fried Osterman.....	Idaho Springs.....Gold, Silver
Franklin.....	Idaho Springs.....Frank Magneson & Co.....	Idaho Springs.....Gold, Silver
Gem, Franklin and Silver (m)	Idaho Springs.....Gem Mining Co.....	Idaho Springs.....Gold, Silver, Lead
Glasgow.....	Idaho Springs.....Gem Mining Co.....	Idaho Springs.....Gold, Silver, Lead
Gold Belt (a)	Georgetown.....John McCloskey.....	1220 Lipan St., Denver.....Gold, Zinc
Gold Dollar Tunnel.....	Silver Plume.....Elwood M. & P. Co.....	Elwood, Nebraska.....Gold, Silver, Lead
Gold Medal (a)	Alice.....Nick Klaes.....	Alice.....Silver, Lead, Zinc
Gold Quartz (a)	Idaho Springs.....Silver Cycle Mining Co.....	732 Cooper Bldg., Denver.....Gold, Sil., Lead (c)
Gold Valley Tunnel.....	Idaho Springs.....Lawson.....	Idaho Springs.....Gold, Sil., Lead (c)
Golden Edge (a)	Idaho Springs.....Columbian Mtn. M. & L. Co.....	2018 California St., Denver.....Silver, Lead, Zinc
Golden Empire and Lemer City Mill (m)	Idaho Springs.....Golden Edge Mines, Inc.....	Idaho Springs.....Gold, Silver, Lead
Grand-Clear Creek (a)	Empire.....Golden Empire Mining Co.....	Empire.....Gold, Silver, Lead
Hammill Tunnel.....	Silver Plume.....G. H. Anderson and Assoc.....	Zinc
Harlem (a)	Hammill Tunnel Mining Co.....	Silver, Lead Zinc
Idaho Tunnel (a)	Alice.....Thomas Minner.....	Gold, Silver, Lead
Iron King.....	Idaho Springs.....Fried Olson & Co.....	Idaho Springs.....Gold, Silver, Lead
Jo Reynolds (m)	Empire.....Ed Carlson.....	Empire.....Gold, Zinc (c)
Katie S. (a)	Empire.....Diamond Jo M. & R. Co.....	711 Gas Bldg., St. Louis, Mo.....Gold, Silver, Lead
Kobold (a)	Alice.....Peter Sweeney.....	Zinc
	Idaho Springs.....	Idaho Springs.....Gold, Sil., Cop. (c)
		(m) Mill operated in connection with mine.
		(a) Operated for part of the year only. (c) No production in 1922.

OPERATING MINES IN CLEAR CREEK COUNTY 1922.—Continued.

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
La Clyde (a)	Idaho Springs	W. C. Fischer	3104 Downing St., Denver	Gold, Silver (c)
League of Nations Tunnel (a)	Grant	Sill Mining Co.	321 Boston Bldg., Denver	Gold, Silver (c)
Lincoln	Idaho Springs	Lincoln M. & M. Co.	Dayton, Ohio	Gold, Silver, Copper
Little Boss (a)	Idaho Springs	Alva Bean & Co.	Idaho Springs	Gold, Silver, Lead, Copper (c)
Little Mattie (m)	Idaho Springs	Mitchell Brokerage Co.	1115 First Nat. Bank, Denver	Gold, Silver, Lead, Copper, Zinc (c)
Lombard	Idaho Springs	Tonopah-Colorado Leasing Co.	Idaho Springs	Gold, Silver, Lead, Copper, Zinc (c)
M. and E. Tunnel (a)	Idaho Springs	J. J. Kane	Idaho Springs	Gold, Silver, Lead, Copper
Madison (a)	Idaho Springs	W. C. Fischer	Box 1674, Denver	Gold, Silver (c)
Marguerite "B" (a)	Idaho Springs	Ed. H. Neuschler and Assoc.	2641 Vallejo St., Denver	Gold, Sil., Lead (c)
Mendoza (m)	Silver Plume	Wasatch-Colorado Mining Co.	Silver Plume	Silver, Lead, Zinc
Meteor (m)	Alice	Coffman Bros. and Wagner	Alice	Gold, Silver
Mulling (oil)	Lawson	P. R. Stanhope	Dumont	Gold, Silver, Lead
Mineral Extension (a)	Idaho Springs	M. G. Tarr	Idaho Springs	Gold, Silver (c)
Mr. F. Elso	Idaho Springs	Mt. Kelso Mining Co.	E. & C. Bldg., Denver	Gold, Sil., Lead (c)
Neglected (a)	Idaho Springs	Charles Olson	Idaho Springs	Gold, Silver, Lead
Nettie B. (a)	Alice	William S. Hall	Alice	Gold, Silver, Copper
Nimrod (a)	Freund and Hunter	Grant	910 26th St., Denver	Gold, Silver, Lead, Zinc (c)
North Fork (a)	Empire	T. A. Tyler	Empire	Gold, Silver (c)
O. S. Storrs	Empire	John A. Heim & Co.	Empire	Gold, Silver (c)
Ontario (a)	Empire	Wm. Young and W. F. Lively	Empire	Gold, Sil., Lead (c)
Oriental Tunnel	Georgetown	A. L. Sealander	Georgetown	Gold, Sil., Lead (c)
Orinoco	Idaho Springs	surety Gold Mining Co.	Idaho Springs	Gold, Sil., Lead (c)
Orphan (a)	Idaho Springs	Daniel E. Gabriel	Idaho Springs	Gold, Silver, Lead
P. T.	Idaho Springs	Burkhart & Co.	1515 Blake St., Denver	Gold, Silver (c)
Pay Rock (a)	Silver Plume	Gypson & Morris	Georgetown	Gold, Silver
Platts	Lawson	Smith Lawson M. & L. Co.	Lawson	Gold, Silver, Lead, Zinc
Producer (a)	Georgetown	David Kennedy	Georgetown	Gold (c)
Queen Elizabeth	Idaho Springs	F. J. Hayes Mining Co.	410 Colo. Bldg., Denver	Gold, Silver
Rainbow (a)	Georgetown	Rainbow Mining Co.	Georgetown	Gold, Sil., Lead (c)
Red Lion	Idaho Springs	M. G. Tarr	Mammoth, Arizona	Gold, Sil., Cop. (c)
Reindeer (a)	S. P. (m)	Brown Reindeer Mining Co.	Silver Plume	Gold, Sil., Lead (c)
S. P. (m)	St. George (m)	S. P. Silver Mining Co.	31 State St., Boston, Mass.	Gold, Sil., Lead (c)
St. George (m)	Georgetown	St. George Mine Inc.	30 Broad St., N. Y. City	Gold, Silver, Lead, Zinc
Senator	Dumont	Blue Ridge Mines Co.	213 Charles Bldg., Denver	Gold, Silver, Lead
Silver Cycle Tunnel	Idaho Springs	Silver Cycle Mining Co.	732 Cooper Bldg., Denver	Gold, Silver, Lead
Silver King	Dumont	Henry Bolhoff	Hendrie & Bolhoff, Denver	Gold, Silver, Lead
Silver Mountain (m)	Empire	Nelson Leasing & Develop. Co.	Empire	Gold, Silver

Silver Queen (a)	Grant.....	J. F. Kimberly and Assoc.....	Gold, Silver (c)
Specie Payment (a)	Idaho Springs.....	James Hays & Co.....	Gold, Silver
Standard (a)	Idaho Springs.....	W. H. Taylor.....	Silver
Summit.....	Idaho Springs.....	G. F. Park.....	Gold, Sil., Lead (c)
Sunburst (m)	Georgetown.....	J. Taylor & Mason and Ruth & Brinker.....	Silver
Teagarden Tunnel (a)	Georgetown.....	Republican Mines Co.....	Gold, Silver (c)
Terrible-Dunderberg (m)	Georgetown.....	Whiting M. & M. Co.....	Gold, Silver, Lead, Zinc (c)
Treasure Vault	Idaho Springs.....	Treasure Vault Mining Co.....	Gold, Silver, Lead
Turner.....	Freeland.....	James Fizzsimmons & Co.....	Gold, Silver, Lead
Twin Ports and Empire (a)	Empire.....	Twin Ports and Empire M. Co.....	Gold, Silver, Lead
Twin Sisters.....	Silver Creek.....	Peter Schurn.....	Gold, Silver, Lead
Waldorf.....	Georgetown.....	Gilpin Development Co.....	Gold, Silver
Wilson.....	Empire.....	Mrs. A. C. Wilson.....	Gold, Sil., Lead (c)
Yukon Girl.....	Idaho Springs.....	Jas. Meidrum and C. Y. Simpson.....	Gold, Sil., Lead (c)

OPERATING MINES IN CUSTER COUNTY, 1922

Name of Mine	Location of Mine	Operator	Character of Product
Basick Extension (a)	Querida.....	Bassick Extension Mining Co.....	P. O. Address
Ben Eaton (a)	Westcliffe.....	Silverado Ore Company.....	Silver Cliff.....
Cloverdale (a)	Cloverdale.....	Cloverdale Mines Co.....	411 Temple Court, Denver.....
Herman (a)	Westcliffe.....	Passiflora Mining & Milling Co.....	411 Temple Court, Denver.....
Mary K.	Rosita.....	E. J. Keim.....	411 Temple Court, Denver.....
Skeek City (a)	Westcliffe.....	Basick Mining Extension Co.....	Westcliffe.....
Stenbrenn.....	Rosita.....	Henry J. Arnold.....	Westcliffe.....
Terrible (m)	Ilse.....	Colorado Lead Products Co.....	411 Temple Court, Denver.....

OPERATING MINES IN DOLORES COUNTY, 1922

Name of Mine	Location of Mine	Operator	Character of Product
A. B. G. (a)	Rico.....	Robert L. Pellett.....	Rico
Emma (m)	Dunton.....	Buffalo Sulphur Refining Co.....	429 Denham Bldg., Denver
Princeton-Premier (a)	Rico.....	Robert L. Pellett.....	Rico
Rico (m)	Rico.....	Syndicate M. & M. Co.....	Rico
Smuggler (m)	Coke Ovens.....	Mt Pleasant Mining Co.....	Denver
Wellington.....	Rico.....	Rico Wellington Mining Co.....	Rico

(a) Operated for part of the year only. (c) No production in 1922. (m) Mill operated in connection with mine.

OPERATING MINES IN EAGLE COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Eagle	Empire Zinc Company	.....	Gold, Silver, Zinc, Conner
Iron Jack	Gypsum	.....	Gold, Silver
Lloyd (a)	Frank Kramer and Assoc.	.....	Gold, Silver
Polar Star	Lloyd Mining Company	.....	Gold (c)
	Ida M. Butts	.....	Gold (c)
	Eagle	.....	Gold (c)
	Eagle	.....	Gold (c)

OPERATING MINES IN GILPIN COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
American Eagle	Central City	Bradford Mines Co.	Central City	Silver, Lead (c)
Annie H. (a)	Apex	Elk Park Mining Co.	1827 Welton St., Denver	Gold, Silver, Lead, Copper
Atkinson (a)	Central City	Thos. and Jas. Atkinson	Central City	Gold, Silver, Lead, Copper (c)
Atlantic (a)	Central City	Denver Mining Pool Co.	1427 16th St., Denver	Gold, Silver, Lead
Bezan (a)	Blackhawk	Bezan Gold Mining Co.	Central City	Gold, Silver (c)
Black Jack (a)	Blackhawk	Silver Mountain Mining Co.	317 Denham Bldg., Denver	Gold, Silver, Lead Zinc
Buell (a)	Central City	Central City M. M. & S. Co.	Central City	Gold, Silver
Buffalo Chip (a)	Central City	G. M. Hansen	Central City	Gold, Silver, Lead
Cape Cod (a)	Blackhawk	C. H. Woolridge	Golden	Gold, Sil., Lead (c)
Conner (a)	Apex	J. J. Mining & Milling Co.	2232 Race St., Denver	Gold, Silver, Lead
Comet	Blackhawk	John M. Sullivan & Co.	Central City	Gold, Silver, Lead
Comstock	Rollinsville	Comstock Leasing Co.	Rollinsville	Gold, Silver, Copper
Cornucopia (m.)	Central City	Cornucopia L. M. & M. Co.	1824 California St., Denver	Gold, Silver, Copper Zinc
Cyclops and Paul Jones (m.)	Blackhawk	Midwest Mining & Milling Co.	2354 Elm St., Denver	Gold, Silver, Lead
Dorothy	Tolland	O. C. Stewart	Apex	Gold, Silver, Copper
Druid	Russell Gulch	Zancanella Bros.	Russell Gulch	Gold, Silver, Lead, Copper
Dublin (a)	Blackhawk	C. G. Nordlien	Blackhawk	Gold, Silver, Lead
Dumas	Blackhawk	Glaze and Ventress	Blackhawk	Gold, Silver, Lead
Dump (a)	Central City	Dump Mine Co.	Central City	Gold, Silver, Conner
Eagle Nest, etc. (a)	Blackhawk	Hamilton and Printon	Manhattan Beach, N. Y.	Gold, Sil., Cop. (c)
Ella	Rollinsville	B. L. Gibson, Jr.	Rollinsville	Gold
Evergreen (m.)	Apex	Evergreen Mines Co.	408 Empire Bldg., Denver	Silver, Copper
Fairfield	Russell Gulch	J. C. F. Webb	Russell Gulch	Gold, Silver, Copper Zinc
Gardner (m.)	.....	Quartz Hill Cons. Mines, Inc.	Idaho Springs	Gold, Silver, Copper
German	Central City	Aug. Rattner and Bart Unterreisen	Centra., City	Gold, Silver, Copper

Golden Ledge, etc.	Central City	Golden Ledge Mines Synd.	Central City	Central City
Golden Crescent (a)	Blackhawk	Frank L. Branham	Blackhawk	Gold (c)
Golden Star	Rollinsville	Golden Star M. & M. Co.	Rollinsville	Gold, Silver, Lead, Copper (c)
Good Fortune	Rollinsville	A. B. Arnold & Co.	Rollinsville	Gold, Silver (c)
Greenside	Central City	Hoosier M. & L. Co.	Central City	Gold, Silver
Homestake	Rollinsville	Nina Allen M. & M. Co.	Rollinsville	Gold, Silver, Lead
Illinois	Central City	Mammoth Development Co.	16th St., Denver	Gold, Silver
Incidental	Rollinsville	Rochester M. & M. Co.	Russell Gulch	Gold, Sil., Cop. (c)
Irish Rose (a)	Central City	Ivor Williams and Assoc.	Rollinsville	Gold, Silver, Copper
Jeanie Blanche (a)	Blackhawk	Richards & McKay	Blackhawk	Gold, Silver (c)
Joe Bush (a)	Hughesville	A. H. Swarthout	Blackhawk	Gold, Silver (c)
Jupiter-St. Clair	Russell Gulch	Jupiter-St. Clair Mining Co.	806 E. & C. Bldg., Denver	Silver, Lead
Keystone-Bates (a)	Blackhawk	Otto Ruttfarth	Blackhawk	Gold, Silver, Copper
Lucky Jim (a)	Rollinsville	Hope M. & M. Co.	401 Jacobson Bldg., Denver	Gold, Silver, Lead, Copper (c)
Maryland	Rollinsville	Maryland Mines & Red. Co.	618th St., Denver	Gold, Sil., Cop. (c)
Mitchell Notaway (a)	Central City	William Mitchell	Central City	Gold, Silver, Lead, Zinc (c)
Monarch Mill (a)	Rollinsville	B. L. Gibson	Rollinsville	Gold, Sil., Cop. (c)
Mountain Monarch (a)	Rollinsville	S-O-N Company	Centerville, Iowa	Gold, Silver (c)
Ozark	Rollinsville	S. R. Turney and Assoc.	Rollinsville	Gold, Silver (c)
Pennsylvania	Central City	H. H. Wherry	Blackhawk	Gold, Silver
Perigo	Rollinsville	Bartle & Co.	Rollinsville	{ Gold, Silver, Copper
Pioneer (a)	Rollinsville	Ioy Gast & Co.	Nederland	Gold, Sil., Lead (c)
Pioneer Mill	Blackhawk	Geo. M. Ashmore	Rollinsville	Gold, Sil., Lead (c)
Queen of the West and Robert Emmett (a)	Blackhawk	H. H. Wherry	Blackhawk	Gold, Silver (c)
Quincy	Central City	Stephens Investment & Trust Co.	Central City	Gold, Silver (c)
Randolph Mill	Tolland	Quincy Gold Mine Co.	Tolland	Gold, Silver (c)
Rara Avis	Blackhawk	R. H. Ventress	Blackhawk	Gold, Silver
Seven-Thirty (a)	Central City	Rara Avis Mines Co.	Central City	Gold, Silver Lead, Copper
Sherman Tunnel (a)	Central City	John Hilton	Rollinsville	Gold, Sil., Lead (c)
Silver King, etc. (a)	Blackhawk	Sherman Mac M. & M. Co.	Blackhawk	Gold, Silver (c)
Smuggler (m)	Rollinsville	B. B. Hughes and Assoc.	Blackhawk	Gold, Silver, Lead, Zinc
Soldier Boy	Central City	New Life M. & M. Corp.	Rollinsville	Gold, Silver
Spotted Horse (a)	Rollinsville	Daniel Munday	1314 Marion St., Denver	Gold, Silver, Lead
Two Lassies and San Souci	Central City	Ivor Williams and Assoc.	Rollinsville	Gold, Silver (c)
Wain, etc.	Central City	Sayre & Klein	Golden	Gold, Silver, Lead, Zinc
War Dance	Central City	Alice-Theora Mining Co.	Central City	Gold, Sil., Cop. (c)
West Notaway	Central City	War Dance Leasing Co.	Idaho Springs	Gold, Silver
			Central City	Gold, Silver
(a) Operated for part of the year only.		(c) No production in 1922.	(m) Mill operated in connection with mine.	

OPERATING MINES IN GRAND COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Happy Dream.....	Parshall.....	C. B. Wider.....	Parshall.....	Gold, Copper (c)
Ready Cash (a).....	Empire.....	Helping Hand M. & M. Development Co.	Gas & Elec. Bldg., Denver.....	Silver, Lead (c)
W. I. M. Tunnel (a).....	Empire.....	Coop. Metal Mines Co.	Empire.....	Gold, Silver (c)

OPERATING MINES IN GUNNISON COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Akron.....	Whitepine.....	Akron Mines.....	Whitepine.....	Gold, Silver (c)
Augusta.....	Rested Butte.....	Allied Mines Corp.	Crested Butte.....	Gold, Silver
Carter (m).....	Ohio City.....	Carter Mines Company.....	Ohio City.....	Gold, Silver
Cotoba.....	Whitepine.....	Cotoba Mining Company.....	510 Ridge Arcade, Kansas City, Mo.....	Gold, Silver (c)
Florence.....	Spencer.....	Florence Leasing Co.	Gunnison.....	Gold
Gold Link.....	J. F. Robinson.....	J. F. Robinson.....	Gunnison.....	Gold, Silver, Lead
Gold Texas.....	Buena Vista.....	Yale Gold Mining and Utility Co.	Buena Vista.....	Gold (c)
Lucky Strike (m) (a).....	Gunnison.....	L. H. Brimhall and Assoc.	Gunnison.....	Silver, Lead, Zinc,
Mariposa (m).....	Crested Butte.....	Miller & Oram.....	Crested Butte.....	Conifer
Roosevelt.....	Roosevelt Mines and Elec. Co.	Pitkin.....	Pitkin.....	Gold

OPERATING MINES IN HINSDALE COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Belle of the East.....	Lake City.....	{ W. E. Mendenhall.....	Lake City.....	Gold
Belle of the West.....	Lake City.....	{ John Igaudes.....	Lake City.....	Silver, Copper
Black Wonder....	Lake City.....	Belle of the West Mining Co.	Lake City.....	Gold, Silver
Buckeye.....	Lake City.....	John Igaudes.....	Lake City.....	Gold, Silver (c)
Cleveland.....	Lake City.....	George D. Jordan and F. S. Williams.....	Lake City.....	Gold, Silver
Fanny Fern (m).....	Lake City.....	Home Investment Company.....	Lake City.....	Gold, Silver
Gallic-Vulcan (a).....	Lake City.....	Fanny Fern Mining Co.	Lake City.....	Gold, Silver, Lead
General Sherman and Gladiator (a).....	Lake City.....	Ben Guionneau.....	Lake City.....	Gold, Silver (c)
George III.....	Carson.....	A. Andrik.....	Lake City.....	Gold, Silver
Golconda.....	Lake City.....	Childs Park Mining Co.	1257 Race St., Denver.....	Gold, Silver
Golden Fleece.....	Lake City.....	Golconda Mines Cons. Inc.	Lake City.....	Gold, Silver
Hidden Treasure.....	Lake City.....	Cline, Simpson & Westensen.....	Olathe.....	Gold, Silver
		Pittman Lease Co.	Lake City.....	Silver, Lead

Ilma-Hiwassee (a).....	Lake City.....	J. F. Steinbeck.....	Gold, Silver
Lellie.....	Lake City.....	Silvermane Mines Co.....	Copper
Ocean Wave and Vermont.....	Lake City.....	R. Phillips.....	Silver, Copper
Sulphurete.....	Lake City.....	Sulphurete M. & M. Co.....	Silver
Ute (a).....	Lake City.....	Atkins & Duff.....	Silver, Lead

OPERATING MINES IN JACKSON COUNTY, 1922

Name of Mine	Location of Mine	Operator	Character of Product
Colorado Fluorspar.....	Cowdrey.....	Colorado Fluorspar Corp.....	Fluorspar

OPERATING MINES IN LAKE COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
A. Y. and Minnie.....	Leadville.....	Bartell Lease and.....	Leadville.....	Gold, Silver, Lead, Zinc
Big 4 (a).....	Twin Lakes.....	Big 4 Mining Co.....	Leadville.....	Gold, Silver (c)
Blaine Shaft.....	Leadville.....	Forrest City Lease.....	Twin Lakes.....	Zinc
Breece Shaft No. 1.....	Leadville.....	Breece Lease.....	Leadville.....	Gold, Silver (c)
Canterbury Tunnel.....	Leadville.....	Leadville Mine Dev. Co.....	329 West 8th St., Leadville.....	Silver
Chrysolite No. 2 Shaft.....	Leadville.....	Clifford Sims.....	Emmett Block, Leadville.....	Silver, Lead
Cleveland.....	Leadville.....	Cleveland Mining Co.....	Delaware Block, Leadville.....	Gold, Silver, Lead
Daly Shaft.....	Fryer Hill.....	Little Chief Mining Co.....	Bank Annex, Leadville.....	Gold, Silver, Lead
Dinero.....	Leadville.....	Inez Mining Co.....	Leadville.....	Gold, Silver
Fanchon.....	Leadville.....	Frank Zaitz & Co.....	Leadville.....	Silver (c)
Fanny Rawlins.....	Leadville.....	Fanny Rawlins Leasing Co.....	Delaware Block, Leadville.....	Gold, Silver, Copper
Fidelity.....	Leadville.....	Fidelity M. M. & P. Co.....	313 So. Phillips St., Philadelphia, Pa., Leadville.....	Gold, Silver, Copper
Fortune.....	Leadville.....	Fortune Mining Company.....	Leadville.....	Gold, Silver, Copper
Garden City.....	Leadville.....	James Foutz & Co.....	401 West 3rd St., Leadville.....	Gold, Silver, Lead, Copper (c)
Hayden Shaft.....	Leadville.....	M. J. Brennan.....	P. O. Bldg., Leadville.....	Gold, Silver
Henrietta and Maid of Erin.....	Leadville.....	Henrietta Mines Co.....	Bank Annex, Leadville.....	Zinc (c)
Hibschle Shaft.....	Leadville.....	Seventh St. Mining Co.....	Leadville.....	Silver, Lead
Ibex.....	Leadville.....	Ibex Mining Co.....	401 Harrison Ave., Leadville.....	Gold, Silver, Copper, Lead, Zinc
La Plata.....	Leadville.....	David D. Nord.....	Leadville.....	Gold, Silver, Lead
Lillian.....	Leadville.....	Tim Riley & Co. and.....	500 West 8th St., Leadville.....	Gold, Silver, Copper, Zinc
Matchless No. 7.....	Leadville.....	Guy Murray & Co. and.....	415 East 8th St., Leadville.....	Silver
		Liden & Company.....	Box 877, Leadville.....	(m) Mill operated in connection with mine.

(a) Operated for part of the year only. (c) No production in 1922.

OPERATING MINES IN LAKE COUNTY, 1922—Continued

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Mikado	Leadville	Mikado Lease	Box 606, Leadville	Silver, Lead, Zinc (c)
Penrose	Leadville	Down Town Mines Co.	Leadville	Gold, Silver, Copper, Lead, Zinc
Ponsardin	Leadville	Seneca Property	2260 Bellaire St., Denver	Silver, Lead, Zinc (c)
Prince of Wales	Leadville	Prince of Wales Leasing Co.	Leadville	Gold, Silver, Zinc
Robert E. Lee	Leadville	Frank Zaiz	Leadville	Silver (c)
Robert Emmet (a)	Leadville	Emil Ekstrand & Assoc.	Leadville	Gold, Silver
St. Kevin (Rosie Tunnel)	Leadville	Robert D. Elder	310 West 8th St., Leadville	Gold, Silver
St. Louis	Leadville	St. Louis Cons. Mines Co.	Natick, Mass.	Gold
Shamus O'Brien	Leadville	New Denver City Mining Co.	Delaware Block, Leadville	Silver
Snowdome Tunnel	St. Kevin	Wilkesbarre Leasing Co.	Box 342, Leadville	Silver
South Ibex	Leadville	South Ibex Mines Co.	Leadville	Gold, Silver, Copper, Zinc
Tiger Shields	Leadville	Metals Exploration Co.	201 14th St., Denver	Silver
Tucson	Leadville	John Harvey & Assoc.	Leadville	Lead, Zinc
Wall Street Shaft	Leadville	Iizard Lease—John Harvey	Leadville	Gold, Silver, Lead
Yak...	Leadville	American Smelting & Refining Co.	120 Broadway, New York	Gold, Silver, Lead, Zinc, Iron
Young Tunnel, etc.	Leadville	Little Jean Mining Company	Room 1, Good Block, Denver	Gold, Silver (c)

OPERATING MINES IN LA PLATA COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Gold Crown Mountain	La Plata	Ludwig Vata & Assoc.	Silverton	Gold, Silver
Idaho and Valley View	Hesperus	Valley View Cons. G. M. Co.	Detroit, Michigan	Gold, Silver
Incas	Hesperus	Lucky Five Leasing Co.	Durango	Gold, Silver
Jumbo (a)	May Day	Jumbo Mining Company	Durango	Gold, Silver (c)
Little La Plata (a)	May Day	Paul Dapra Leasing Co.	May Day	Gold, Silver
Little La Plata	La Plata	Ldy Eleonora Mining Co.	La Plata	Gold, Silver (c)
May Day	La Plata	Cumberland Mines Co.	302 Denham Bldg., Denver	Gold, Silver
Mountain Lilly	Boyle & Hughes	Boyle & Hughes	Durango	Gold, Silver
Muldoon	Hesperus	Myres & Voight	Hesperus	Silver
Puzzle (a)	Durango	Puzzle Mining Company	Durango	Gold, Silver (c)
Southern Boy (a)	Durango	J. R. E. Hutchinson & Assoc.	Durango	Gold, Silver

OPERATING MINES IN LARIMER COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Windy Peak	Manhattan	Geo. Asher & Co.	Home	Gold, Silver (c)

OPERATING MINES IN MESA COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Calamity and Maverick	Gateway	Radium Company of Colorado.	Radium Bldg., Denver	Carnotite

OPERATING MINES IN MINERAL COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Amethyst	Creede	Norman Alspaugh	Creede	Silver
Bachelor and Spar	Creede	Bachelor M. & M. Co.	U. S. Nat. Bank Bldg., Denver	Gold, Silver, Lead
Corsair	Creede	Wells & Comstock	Creede	Silver
Colewood	Creede	E. M. Neff & Assoc.	Creede	Silver
Fluorspar	Wagon Wheel Gap	American Fluor Spar Co.	Wagon Wheel Gap	Fluorspar
Silver King	Creede	Midwest Mining Company	Creede	Silver
Solomon	Creede	H. D. Barnhart	Creede	Gold, Silver, Lead
Windsor-Governor-Taylor-Metropole	Creede	Chama Leasing Company	Creede	Zinc

OPERATING MINES IN MONTROSE COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Cashin	Placerville	Arms Lem-Pom Mining Co.	Bedrock	Silver, Copper
Long Park	Naturita	United States Radium Corporation	58 Pine St., New York City	Carnotite
Marvel, etc.	Naturita	Radium Company of Colorado	Radium Bldg., Denver	Carnotite (c)
(m)	Naturita	Standard Chemical Co.	Vanadium Bldg., Pittsburgh, Pa.	Carnotite

OPERATING MINES IN OURAY COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Atlas (m)	Sneffels	Atlas Mining & Milling Co.	Sneffels	Gold, Silver, Lead, Zinc
Bachelor	Ouray	Martin Borlatti	Ouray	Gold, Silver, Lead, Zinc
Barstow (m)	Ouray	C. R. Wilfley	Ouray	Gold, Silver, Lead, Zinc
Binmetallist	Sneffels	King & Price Leasing Co.	Ouray	Gold, Silver

(a) Operated for part of the year only. (c) No production in 1922. (m) Mill operated in connection with mine.

OPERATING MINES IN OURAY COUNTY, 1922—Continued

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Gaudalope.....	Ouray.....	Lucky Twenty Mining Co.....	Ouray.....	Silver, Copper
H. A. C.....	Ouray.....	Chipeata M., M. & S. Co.....	Ouray.....	Gold, Silver
Monas Queen.....	Ouray.....	White Cloud M. & M. Co.....	Brush.....	Lead, Zinc (c)
Mountain Top (m).....	Ouray.....	Mountain Top Mining Co.....	Ouray.....	Gold, Silver, Lead, Copper, Zinc
Paymaster.....	Ouray.....	Paymaster Mines Co.....	413 Cooper Bldg., Denver.....	Gold, Silver (c)
Polar Star.....	Ouray.....	Polar Star Mining Syndicate.....	Ouray.....	Silver, Copper
Revenue Tunnel.....	Ouray.....	Revenue Tunnel Mines Co. and Sneathel's Leasing Co.	Sneathel's.....	Gold, Silver, Lead, Zinc
Wanakah.....	Ouray.....	Welch-Worland Mines Syndicate.....	Ouray.....	Gold, Silver
Wedge.....	Ouray.....	Jesse Steele and Fellin Bros.	Ouray.....	Silver

OPERATING MINES IN PARK COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
(a).....	Alma.....	Pulaski Inv. M. & P. Co.....	Alma.....	Silver (c)
Champaign.....	Alma.....	J. N. Redman & Assoc.....	Alma.....	Gold, Silver, Zinc
Concord Chief, Metz (a).....	Webster.....	Thomas Lambie.....	2012 Larimer St., Denver.....	Gold, Silver, Lead, Copper (c)
Etna (a).....	Alma.....	A. H. Reynolds.....	Centerburg, Ohio.....	Gold, Silver (c)
Funston and Lookout.....	Alma.....	J. J. C. Askwig & Co.	North Platte, Nebraska.....	Gold, Silver
London.....	Alma.....	London Gold Mines Co.	Colorado Springs.....	Gold, Silver, Lead
Lucky Strike.....	Webster.....	Tomco Brothers.....	Cassells.....	Gold, Silver, Copper
Magnolia.....	Alma.....	Leverett Davis.....	217 Engineers Bldg., Denver.....	Gold, Silver
Missouri.....	Cassells.....	C. M. Snyder.....	Cassells.....	Gold, Silver, Lead, Copper
Paris and Excelsior (c).....	Alma.....	Mt. Gross Ores Company.....	811 Cen. Sav. Bk. Bldg., Denver.....	Gold, Silver (c)
Russia or Lincoln.....	Alma.....	Lincoln Cons. Mining Co.	Alma.....	Gold, Silver, Lead, Zinc
Sweet Home (a).....	Alma.....	Sweet Home Gold and Silver Mining and Milling Company.....	408 Tramway Bldg., Denver.....	Gold, Silver (c)
Whale.....	Webster.....	Whale Mines Leasing Co.	Gas and Elec. Bldg., St. Louis, Mo.	Gold, Silver, Lead, Zinc

OPERATING MINES IN PITKIN COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Bonnybel (a).....	Aspen.....	W. D. Beck.....	Aspen.....	Silver, Lead
Cowenhoven Tunnel and Hunter Creek Mill (m).....	Aspen.....	Silver Mines Co. of America.....	801 Magee Bldg., Pittsburgh, Pa. Silver, Lead	

Hope Tunnel.....	Aspen.....	Hope M., M. & L. Co.....	Aspen.....	Silver
Hurricane.....	Aspen.....	Hurricane Leasing Co.....	Aspen.....	Silver, Lead (c)
Jewel.....	Aspen.....	Jewell Mining Company.....	517 Dan Waggoner Bldg., Fort Worth, Texas.....	Silver (c)
Midnight.....	Aspen.....	Midnight Mining Company.....	Aspen.....	Silver, Lead (c)
Newman Tunnel.....	Aspen.....	Newman M. M. & L. Co.....	Aspen.....	Silver, Lead
Park Tunnel.....	Aspen.....	Park T. & M. Co.....	Aspen.....	Silver, Lead
Shamrock (a).....	Aspen.....	R. E. Duke and J. L. Smoky.....	1241 Pearl St., Denver.....	Silver, Lead
Smuggler (m).....	Aspen.....	Smuggler Leasing Co.....	Aspen.....	Silver (c)
Spar.....	Aspen.....	Spar Cons. Mining Co.....	Aspen.....	Silver, Lead
Veteran Tunnel.....	Aspen.....	Spar Cons. Mining Co. and Milline Mining Co.	Aspen.....	Silver

OPERATING MINES IN ROUTT COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Blue Jay.....	Hahns Peak.....	Claud McFadden.....	Hahns Peak.....	Gold, Silver (c)
Florence R.....	Hahns Peak.....	Glen Robbins.....	Hahns Peak.....	Gold, Silver (c)
Royal Flush, etc.	Columbine.....	Hahns Peak Gold M. & M. Co.....	Columbine.....	Gold, Silver, Zinc,
Tom Thum and New Discovery.....	Steamboat Sp'gs.....	Tom Thum Syndicate.....	Steamboat Springs.....	Copper (c)

OPERATING MINES IN SAGUACHE COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Cocomongo.....	Villa Grove.....	Cocomongo Mines Co.....	Salida.....	Gold, Silver, Lead,
Eagle (a).....	Villa Grove.....	Saguache Eagle Mining Co.....	Villa Grove.....	Copper
Eastern Star and Annex (a).....	Crestone.....	James E. Allen.....	Crestone.....	Silver
Joe Wheeler (a).....	Alder.....	Joe Wheeler Mining & Dev. Co.....	Box 1185, Pueblo.....	Gold
Orient.....	Villa Grove.....	Colorado Fuel & Iron Co.....	Boston Bldg., Denver.....	Silver (c)
Rawley (m).....	Bonanza.....	Colorado Corporation.....	201 14th St., Denver.....	Iron

OPERATING MINES IN SAN JUAN COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Bailey.....	Animals Forks.....	Wide West Mining Co.....	Silverton.....	Gold, Silver
Caledonian (m).....	Eureka.....	Caledonian M. & M. Co.....	Leadville.....	Silver, Lead, Zinc

(a) Operated for part of the year only. (c) No production in 1922. (m) Mill operated in connection with mine.

OPERATING MINES IN SAN JUAN COUNTY, 1922—Continued

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Coming Wonder	Silverton	Anvil Leasing Company and F. Thompson and Assoc.	Silverton	Gold, Silver, Copper, Zinc
Cranky	Silverton	Rolling Mt. M. & M. Co.	100 Broadway, Denver	Gold, Silver, Lead, Copper, Zinc
Dives	Howardsville	D. MacLean and Assoc.	Durango	Gold, Silver
Frederick	Silverton	Patrick Mallay and Assoc.	Silverton	Gold, Silver
Garryowen Tunnel	Howardsville	Wide West Mining Company	Silverton	Gold, Silver
Hamlet (m)	Silverton	Hamlet-Dexter M. & M. Co.	Silverton	Gold, Silver (c)
Henrietta	Silverton	Henrietta Copper Mining Co.	1816 California St., Denver	(c)
Highland Mary	Silverton	Nick Graff	Silverton	(c)
Iowa	Silverton	Melville M. & M. Co.	Silverton	Gold, Silver, Lead, Copper
Joe and John (a)	Silverton	Golden Cons. Mines Co.	1816 California St., Denver	Gold, Silver (c)
Little Nation	Howardsville	Little Nation Mining Co.	423 Lee Bldg., Kansas City, Mo.	Gold, Silver, Lead, Copper (c)
Mayflower	Silverton	Mayflower M. & M. Co.	Silverton	Gold, Silver, Lead, Copper (c)
North Star (a)	Silverton	H. L. Hollis	435 Ry. Exchange, Chicago	Gold, Silver (c)
Otte Group (a)	Silverton	American Mining and Refining Corp.	Elliott Square, Buffalo, N. Y.	Gold, Silver, Lead, Copper, Zinc (c)
Pride of the West	Howardsville	Joseph Gibbon Cons. M. & M. Co. and	Silverton	Gold, Silver, Lead, Copper, Zinc (c)
Queen City	Silverton	Wide West Mining Company	Silverton	Gold, Silver, Lead, Copper
Silver Queen	Silverton	John Johnson and Michael Burns	Silverton	Gold, Silver
Silver Slide	Animas Forks	Wide West Mining Company	Silverton	Silver
Sunnyside (m)	Stony Pass	W. A. Davis	Silverton	Gold, Silver, Lead, Copper, Zinc
	Eureka	Sunnyside M. & M. Co.	Eureka	

OPERATING MINES IN SAN MIGUEL COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Alta (m)	Telluride	Belmont Wagner Mining Co.	500 Bullitt Bldg., Philadelphia, Pa.	Gold, Silver, Lead, Copper
Black Bear	Telluride	Colorado Superior Mining Co.	Telluride	Gold, Silver, Lead, Zinc, Copper
Carbonero	Ophir	Ruuitila-Brown Leasing Co.	Ophir	Gold, Silver, Lead, Zinc, Copper
Caribou Mill	Ophir	Frank Saunders and Assoc.	Ophir	

Coltoc.....	Vanadium.....	Coltoc Mining Company.....	401 Bernice Bldg.,
Humboldt.....	Telluride.....	Humboldt Mines Company.....	Telluride, Wash.....
New Dominion.....	Ophir.....	Ophir Gold Mines & R. Co.....	Gold, Silver, Lead Gold, Silver, Lead, Copper, Zinc
Niteelite Vulcan Camp.....	Vanadium.....	Dr. S. A. Sochocky.....	(c)
San Bernardo (m).....	Ophir.....	Valley View Leasing & Mining Co.....	Gold, Silver, Lead
Shamus O'Brien (a).....	Ophir.....	Shamus O'Brien Lease.....	Gold, Silver
Silver Bell (m).....	Ophir.....	Ophir Loop Mines & Metals Co.....	Gold, Silver, Lead, Copper
Sheridan Crosscut and Perino Mill (m).....	Telluride.....	Gold Drift Leasing Company and James J. McLaughlin Lease.....	Gold, Silver
Smuggler (m).....	Telluride.....	Smuggler-Union Mining Co.....	Gold, Silver, Lead
Tombboy (m).....	Telluride.....	Tombboy Gold Mines Co., Ltd.....	Gold, Silver, Lead, Copper, Zinc

OPERATING MINES IN SUMMIT COUNTY, 1922

Name of Mine	Location of Mine	Operator	Character of Product
Congress Tunnel (a).....	Montezuma.....	Moon Beam Mines Syndicate.....	Silver
Detroit.....	Breckenridge.....	Detroit Leasing Company.....	Gold, Silver
Etta M. (a).....	Frisco.....	Ecklund & Kempf.....	Silver, Lead (c)
Four-Most.....	Frisco.....	Four-Most M. & M. Co.....	Gold, Silver, Lead
Fredonia.....	Breckenridge.....	Frank Peabody & Co.....	Silver
Ground Hog.....	Breckenridge.....	Ground Hog Leasing Co.....	Silver (c)
Hunkidory.....	Montezuma.....	Silver M. M. & L. Co.....	Silver, Lead
James Boy (a).....	Dillon.....	James Boy Mining Co.....	Copper (c)
Jerry.....	Montezuma.....	H. E. McCray.....	Silver, Lead, Zinc
June Bug.....	Breckenridge.....	Boyce Brothers.....	Gold, Silver, Lead
King Solomon.....	Frisco.....	King Solomon Mining Co.....	525 Min. Exc. Bldg., Denver.....
Michigan.....	Kokomo.....	Michigan Ulthoff Mines.....	Gold, Silver
Morgan.....	Montezuma.....	Persistent M., M. & L. Co.....	Bank Annex, Leadville.....
Pennsylvania. (a).....	Montezuma.....	Liberty Mining & Reduction Co.....	38 West Maple St., Denver.....
Rothchild's Tunnel (a).....	Montezuma.....	E. F. and J. A. Gustafson.....	Montezuma.....
Royal Tiger (m).....	Breckenridge.....	Royal Tiger Mines Co.....	Tiger.....
Silver King.....	Montezuma.....	E. F. Brophy & Co.....	Montezuma.....
Silver Tip.....	Montezuma.....	E. F. S. Chilson.....	Montezuma.....
Warriors Mark.....	Breckenridge.....	Warriors Mark Mining Co.....	Boston, Mass.....
Wellington (m).....	Breckenridge.....	Wellington Mines Company.....	Breckenridge.....

(a) Operated for part of the year only.

(c) No production in 1922.

(m) Mill operated in connection with mine.

OPERATING MINES IN TELLER COUNTY, 1922

Name of Mine	Location of Mine	Operator	P. O. Address	Character of Product
Ajax	Cripple Creek	Ajax Leasing Co. and Tonopah-Max Mining Co.	422 First Nat. Bk. Bldg., Denver	Gold
American Eagles	Cripple Creek	Stratton C. C. M. & D. Co.	117 E. Pikes Peak Ave., Colorado Springs	Gold
Blue Flag	Cripple Creek	Blue Flag-Silverton Gold Mines Co.	703 Exchange Bldg., Denver	Gold (c)
Commodity	Cripple Creek	Phoenix Gold Mining Co.	Denver	Gold (c)
Coriolanus	Cripple Creek	B. F. Hill Cons.	Cripple Creek	Gold (c)
Cresson	Cripple Creek	Cresson Cons. G. M. & M. Co.	Colorado Springs	Gold
Dig Gold	Cripple Creek	Dig Gold Mining Co.	Cripple Creek	Gold
Doctor Jack Pot	Cripple Creek	Doctor Jack Pot Mining Co.	Cripple Creek	Gold
Elkhorn (a)	Cripple Creek	Elkhorn Mining & Leasing Co.	35 Independence Bldg., Colorado Springs	Gold (c)
Elkhorn	Cripple Creek	Raven Hill Mining & Leasing Assn.	206 Hagerman Bldg., Colorado Springs	Gold (c)
Elkton	Cripple Creek	El Paso Cons. Gold Mining Co.	617 Majestic Bldg., Denver	Gold
Findley (a)	Cripple Creek	Findley Mines Co.	Cripple Creek	Gold (c)
Forest Queen	Cripple Creek	Edwin Gaylord	Independence	Gold
Free Coinage (a)	Cripple Creek	Ducey & Co.	115 No. 3rd St., Cripple Creek	Gold
Gold Bond (a)	Cripple Creek	Gold Bond Syndicate	Box 123, Colorado Springs	Gold
Gold King	Cripple Creek	Gold King Mining Co.	301 Mining Exchange Bldg., Colorado Springs	Gold
Granite	Cripple Creek	A. J. and L. E. Wirebaugh	Cripple Creek	Gold (c)
Hiawatha	Cripple Creek	Ironclad Hill Mining & Dev. Co.	Cripple Creek	Gold (c)
Ironclad (a)	Cripple Creek	Isabella Mines Company	222 Burns Bldg., Colorado Springs	Gold (c)
Isabella (a)	Cripple Creek	Victor	Cripple Creek	Gold (c)
Kalamazoo	Cripple Creek	Jerry Johnson Gold Mining Co.	1520 Welton St., Denver	Gold
Little Fontleroy	Cripple Creek	Giblin & Co.	Cripple Creek	Gold (c)
Mary McKinney	Cripple Creek	McClanahan Gold Mining Co.	Independence	Gold (c)
Midget	Cripple Creek	Mary McKinney Mining Co.	1520 Welton St., Denver	Gold
Modoc (m)	Cripple Creek	Midget Cons. Gold Mining Co.	Cripple Creek	Gold
New Gold Dollar	Cripple Creek	Modoc Cons. Mines Co.	837 Symes Bldg., Denver	Gold
Nightingale	Cripple Creek	New Gold Dollar Mining Co.	Cripple Creek	Gold
Portland (m)	Cripple Creek	Eureka Leasing Co.	Burns Bldg., Colo. Springs	Gold
Puzzle	Cripple Creek	Portland Gold Mining Co.	Colorado Springs	Gold
Rose Nicol	Cripple Creek	Green and Goldstein	Cripple Creek	Gold
Sangre de Christo	Cripple Creek	Kyner & Co.	Cripple Creek	Gold
Santa Rita	Cripple Creek	Reclamation Metal Mines Co.	7 North Tejon St., Colorado Springs	Gold
School Section No. 3 (a)	Cripple Creek	P. J. Hamstrom	Victor	Gold
South Burns	Cripple Creek	John Farrell	Cripple Creek	Gold
Star of Bethlehem	Cripple Creek	LeBrun Mining Association	Cripple Creek	Gold
Vindicator, etc.	Cripple Creek	Cooper and Anderson	Cripple Creek	Gold
Vindicator	Cripple Creek	Vindicator Cons. G. M. Co.	603 Symes Bldg., Denver	Gold
United Gold Mines Co.	Cripple Creek	United Gold Mines Co.	Cripple Creek	Gold

COLORADO BUREAU OF MINES

OPERATING OIL SHALE PROPERTIES IN GARFIELD COUNTY, 1922

Name	Location	Operator	P. O. Address
Little Jim	Grand Valley	Joseph D. Ahearn	Glenwood Springs
	Grand Valley	American Shale Refining Co.	First Nat. Bank Bldg., Denver
	Grand Valley	T. E. Bailey & Co.	Grand Valley
	DeBeque	Bailes & Carlisle	DeBeque
	Grand Valley	J. W. Bell	Glenwood Springs
	DeBeque	Black Queen Shale Co.	Grand Junction
	DeBeque	C. C. Bruner and Assoc.	Delta
	Grand Valley	Callahan Oil Shale Co.	First Nat. Bank Bldg., Denver
	Grand Valley	Campbell Refining Corporation	250 West 57th St., New York
	Grand Valley	Colorado Carbon Co., Inc.	700 E. & C. Bldg., Denver
	DeBeque	Columbia Oil Shale & Refining Co.	532 Equitable Bldg., Denver
	Grand Valley	D. A. Sullivan and Assoc.	Denver
	DeBeque	James Doyle	First Nat. Bank Bldg., Denver
	Grand Valley	E. D. Milliken	Glenwood Springs
	Grand Valley	R. L. Eaton	Glenwood Springs
	Collbran	J. F. Gregory	DeBeque
	Grand Valley	Joseph Juhan	DeBeque
	DeBeque	Index Shale Oil Co.	722 Symes Bldg., Denver
	Grand Valley	Monarch Shale Oil Co.	DeBeque
	DeBeque	Mt. Logan Oil Shale M. & R. Co.	276 Pacific Ave., Jersey City, N. J.
	Grand Valley	J. P. Lyons	DeBeque
	DeBeque	Mt. Blaine Oil Shale Co.	DeBeque
Dry Fork	DeBeque	Oil Shale Mining Co.	310 Boston Bldg., Denver
Clear Creek	DeBeque	Overland Producing & Refining Co.	DeBeque
	DeBeque	Shale Oil Syndicate	Los Angeles, California
	Grand Valley	W. S. Skinner	DeBeque
	DeBeque	Standard Shale Products Co.	Des Moines, Iowa
	DeBeque	Superior Shale Oil Co.	Worcester, Mass.
	DeBeque	Herbert N. Wright	Exch. Nat. Bk. Bldg., Colo. St., Denver
	Grand Valley	G. A. Taff	E. & C. Bldg., Denver
	Grand Valley	Union Oil Co. of California	
Ute Rock	Grand Valley	Ute Rock-John Cortellini	Leadville

OPERATING OIL SHALE PROPERTIES IN MESA COUNTY, 1922

Name	Location	Operator	P. O. Address
	DeBeque	American Mineral Oil Co.	Cooper Bldg., Denver
	DeBeque	L. E. Girard	Boulder
	DeBeque	Pyramid Shale Co.	1750 Williams St., Denver
(a) Operated for part of the year only.		(c) No production in 1922.	(m) Mill operated in connection with mine.

OPERATING QUARRIES AND CLAY PITS, 1922

Town	Location	County	Name	Product	Operator	P. O. Address
Lyons	Boulder	St. Vrain	St. Vrain	Granite	E. G. Bird	354 So. Wash., Denver
Lyons	Boulder	St. Vrain	Red	Granite	J. C. Brodie	609 Interstate Trust Bldg., Denver
		Sandstone		Colo. Wholesale Granite Co.		
Salida	Chaffee	Black Diamond	Granite	Black Diamond Granite Co.		
Salida	Chaffee	Bowers	Granite	Bowers Brothers		
Salida	Chaffee	Giant Eclipse	Granite	Colorado Granite Co.		
Monarch	Chaffee	Clear Creek	Limestone	Tomlin and Beck		
Salida	Chaffee	Mica	Granite	Salida Granite Corporation		
Westcliffe	Custer	Ware	Mica	Denver Marble & Granite Co.		
Larkspur	Douglas		Plastic Clay	Mica Products Co.		1224 Lawrence St., Denver
Castle Rock	Douglas		Plastic Clay	W. S. Hawn		429 Boston Bldg., Denver
Manitou	El Paso	Manitou	Limestone	E. L. Scott		Larkspur
Manitou	El Paso	Paso	Sandstone	Western Lime Company		Castle Rock
Salida	Fremont	Burnito	Granite	J. H. Harkins		305 Sugar Bldg., Denver
Salida	Fremont	Burnito	Granite	Rocky Mountain Granite Co.		Colorado Springs
Canon City	Fremont	Calcite	Limestone	E. F. Bowen		Salida
Canon City	Fremont	Calcite	Limestone	S. Vernon St. John		Canon City
Concrete	Fremont	Concrete	Limestone	Colorado Fuel & Iron Co.		Boston Bldg., Denver
Canon City	Fremont	Diamond	Shale	Colorado Lime Corporation		232 Empire Bldg., Denver
Canon City	Fremont	Dolomite	Fire Clay	U. S. Portland Cement Co.		305 Ideal Bldg., Denver
Texas Creek	Fremont	Echo	Dolomite	Diamond Fire Brick Co.		Canon City
Coaldale	Fremont	Gypsum	Granite	Roy Frankenberg		Canon City
Canon City	Fremont	Jewett	Limestone	William Olson & Son		106 E. B St., Pueblo
Salida	Fremont	McLaughlin	Fire Clay	T. A. Gilray		Coaldale
Howard	Fremont	Noon	Granite	Jewett Fire Brick Co.		Canon City
Coloaxi	Fremont	Noon	Granite	Nan T. McLaughlin		1015 Osage St., Denver
Portland	Fremont	Texas Creek	Limestone, Shale	Colo. Marble & Stone Co.		Denver
Texas Creek	Fremont	8 Mile	Granite	Peter Noon		Cotopaxi
Canon City	Fremont	Gunnison	Limestone	Colo. Portland Cement Co.		Denver
Marble	Gunnison	Carrara	Marble	J. A. Lamb		Texas Creek
Marble	Gunnison	Colorado Marble	Marble	Gennaro Ricchitti		Canon City
Marble	Gunnison	Yule	Marble	Carrara Yule Marble Co.		Equitable Bldg., Denver
Marble	Gunnison	Yule	Marble	Colorado White Marble Co.		Marble
Golden	Jefferson	Fire Clay	Marble	Yule Marble Co. of Colorado		Ilmenwood Springs
Golden	Jefferson	Fire Clay	Marble	Chris. Bennett		Colo. Nat. Bank Bldg., Denver
Golden	Jefferson	Fire Clay	Marble	Denver Sewer Pipe & Clay Co.		Golden
Golden	Jefferson	Fire Clay	Marble	Golden Fire Brick Co.		Denver
Golden	Jefferson	Fire Clay	Marble	Fire and Plastic Clay Golden Clay Mining Co.		Golden
Golden	Jefferson	Fire Clay	Marble	Golden Clay Parfet		Golden
Golden	Jefferson	No. 10 Clay Pit	Plastic Clay	Golden Fire Brick Co.		Golden
Golden	Jefferson	Queen City	Plastic Clay	Denver Pressed Brick Co.		219 Temple Court Bldg., Denver
Golden	Jefferson	Rockwell	Plastic Clay	Jefferson Clay & Inv. Co.		Golden

Golden	Jefferson	Rubey	Plastic Clay	Rubey Clay Co.	Golden
Golden	Jefferson	White Clay	Plastic Clay	W. R. Salmons	Golden
Breckwood	Jefferson	Bells	Limestone	Golden Clay Mining Co.	Golden
Inglewood	La Plata	Acosta	Limestone	John F. Bell	Rockwood
Inglewood	Larimer	Larimer	Limestone	Indeside Limestone Co.	Sugar Bldg., Denver
Inglewood	Larimer	Ft. Collins	Limestone	Fort Collins Limestone Co.	Fort Collins
Inglewood	Larimer	Furones	Limestone	Dem Furones	La Porte
Inglewood	Larimer	Joseph	Limestone	Josephson Brothers	Bellvue
Inglewood	Larimer	Owl Canon	Limestone	Owl Canon Quarry Co.	La Porte
Inglewood	Larimer	Vangel	Limestone	O. J. Walter	Bellvue
La Junta	Otero		Plastic Clay	James Vangel	La Porte
Swallows	Pueblo	Pueblo	Limestone	La Junta Clay Products Co.	La Junta
Lime	Pueblo	Pueblo	Limestone	Colorado Fuel & Iron Co.	505 Tramway Bldg., Denver
Pueblo	Pueblo	Livesey	Limestone	William Olson & Son	Boston Bldg., Denver
Pueblo	Pueblo	Orman	Limestone	Orman Crushed Rock Co.	Pueblo
Stone City	Pueblo	Turkey Creek	Flint, Plastic Clay	Pueblo Clay Products Co. and Turkey Creek Stone, Clay and Gypsum Co.	406 Thatcher Bldg., Pueblo
Capers Spur	Pueblo	Vulcan	Fire and Plastic Clay	Standard Fire Brick Co.	302 Central Block, Pueblo

OPERATING MILLS* AND SMELTERS, 1922

Character of Plant	Town	Location	County	Operator	P. O. Address
Arsenic and Cadmium Refinery	Denver	Adams and Denver	American Smelting & Refining Co.	120 Broadway, N. Y. City	
Ore Sampler	Idaho Springs	Clear Creek	Clear Creek Gilpin Ore Co.	Idaho Springs	
Carnotite Ore Reduction	Denver	Denver	American Continuous Retort Co.	810 Cen. Sav. Bk. Bldg., Denver	
Carnotite Ore Reduction	Denver	Denver	National Rare Metals Co.	505 California Bldg., Denver	
Chemical Ore Reduction	Denver	Denver	Radium Company of Colorado	Radium Bldg., Denver	
Cyanidation	Colorado Springs	El Paso	Golden Cycle M. & R. Co.	Colorado Springs	
Zinc Oxide Mfg.	Canon City	Fremont	Empire Zinc Company	Canon City	
Zinc Oxide Mfg.	Leadville	Lake	River Smelting & Refining Co.	Florence	
Lead Smelter	Leadville	Lake	American Smelting & Refining Co.	120 Broadway, N. Y. City	
Zinc Oxide Mfg.	Leadville	La Plata	Western Zinc Oxide Co.	Delaware Block, Leadville	
Lead Smelter	Durango	Pueblo	American Smelting & Refining Co.	120 Broadway, N. Y. City	
Zinc Oxide Mfg.	Pueblo	Pueblo	United States Zinc Co.	120 Broadway, N. Y. City	
Ore Sampler	Victor	Victor	Fagle Samplers, Inc.	Victor	
Compressed Air Plant	Independence	Teller	Teller	Teller County Air Co.	Cripple Creek

*Does not include mills operated in connection with individual mines which are included in the mine lists.

OPERATING PLACER MINES AND DREDGES, 1922

Name	Town	Location	County	Operator	P. O. Address
Black Bear Placer.....	Idaho Springs.....	Clear Creek.....	Clear Creek Placer Co.....		Idaho Springs
Pactolus Placer.....	Gilpin.....	Gilpin.....	Pactolus Gold Dredging Co.....		402 Foster Bldg., Denver
Perigo Placer.....	Rollinsville.....	Rollinsville.....	F. Messinger & Co.....		Rollinsville
Fairplay Dredge No. 1.....	Rollinsville.....	Park.....	South Park Dredging Co.....		433 California St., San Francisco, Calif.
Bemrose Placer.....	Breckenridge.....	Summit.....	W. E. Terrell & Assoc.....		Breckenridge
Blue River Dredge.....	Breckenridge.....	Summit.....	Blue River Placer Mining Co.....		10 Independence Bldg., Colorado Springs
Florence.....	Breckenridge.....	Summit.....	Florence Gold Dredging Co.....		610 Mining Exchange Bldg., Denver
L. H. Fuller Placer.....	Breckenridge.....	Summit.....	Charles Sisler.....		Breckenridge
Tonopah Dredge No. 1.....	Breckenridge.....	Summit.....	Tonopah Placers Co.....		572 Bullitt Bldg., Philadelphia, Pa.

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R. J. Hoefnagel
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